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ABSTRACT

This document contains 10 essays based on papers presented at a 1991 conference on the changed role of overseas education in development. The book discusses the impact of the end of the Cold War and a rapidly changing economic environment on the rationale for international student and faculty mobility. The practice in developing nations of obtaining education abroad changed from colonial times, through the postcolonial era, and the Cold War. The first article, "The World in the 1990s" (Francis X. Sutton), deals with the implications for overseas education in light of the events of 1989, the year that saw the disintegration of the socialist bloc and a marked reduction in East-West tensions. The disappearance of the First and Second Worlds as meaningful concepts put into question the notion of a Third World. "Global Trends in Overseas Study" (William K. Cummings) and "Potential Impact of Technology Upon Overseas Education" (Willard D. Shaw) give examples of some of the realities of overseas education today, in particular, the volume of the student flow and the technological context within which that flow occurs. "Meeting Human Resource Needs" (Viswanathan Selvaratnam) discusses the sources of successive waves of enthusiasm for overseas education in developing countries. "Human Resources and Technological Development" (Robert E. Evenson) seeks to identify some of the contributions of overseas education to the welfare of developing countries. Namibia and Thailand are discussed in "Namibia's Education and Training Needs" (Walter R. Johnson) and "Thailand: A Case Study" (Courtney Nelson and others). "Overseas Education and Civil Society" (Jorge G. Castaneda) explores the role of intellectuals as interlocutors between nations. Inter-university linkages and fellowship programs are discussed in "University International Linkages" (Ralph H. Smuckler) and "Evaluation of Overseas Fellowship Programs" (A. M. Weisblat). (DK)

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International Investment in Human Capital:

Overseas Education for Development

Craufurd D. Goodwin, Editor

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Introduction

Overseas Education for Development

Craufurd D. Goodwin

The practice of obtaining education abroad, usually higher education, has been common in developing countries for centuries.Until recently, the practice occurred mainly within a dependent colonial relationship, wherein the metropolis provided education for future leaders of the colonies for a variety of purposes it perceived to be in its own interest. Colonial students, the metropolitans believed, would return after graduation to help administer their homelands in the interest of the metropolis, would bring the professional skills required of every civilized society (as doctors, lawyers, teachers, soldiers, engineers, clergy, public servants), and, not least, would absorb and come to admire and respect the culture and values of the ruling power. For all these reasons, overseas education in the great European empires that crumbled after World War II was usually biased toward the intellectual and social elite—the key leaders whose minds and hearts it was necessary to capture. The objective of this overseas education within empires could, only with a considerable stretch, be described by what we now call education for development. Rather, it was efficient administration and a means of social control.

Phenomenon of the Postcolonial Era

Overseas education for development is a notion that can be associated with the years after decolonization following World War II. It was based on a shared belief among the older, industrialized, high-income countries (including some of the former imperial powers) and the new nations emerging out of the former colonies that the old had much to teach and the new much to learn.

For their part, the developing countries accepted the principle that their economic, political, and social advancement would be possible only by learning how successful nations did it. Since the new nations often placed economic objectives above other values, they looked abroad, particularly for training in practical skills that would increase domestic output and efficiency.

In welcoming scholars from developing countries, their more developed (but no longer dominant) hosts had a variety of motives in mind. In some cases they simply sustained social and cultural links that had become comfortable within a departed empire. Some also felt a degree of genuine commitment to help old and new friends gain the development they themselves enjoyed. Increasingly, after World War II, the education of youth from developing countries became a means to build and cement relationships useful for trade and investment in the struggles of the cold war and an increasingly more integrated world economy.

Two presumptions of the early years of overseas education for development in its modern guise were, first, that the process could be in the main a one-shot operation. For a new nation, it was thought, obtaining education abroad was rather like being inoculated or borrowing a spoonful of yeast from a neighbor on the frontier. Once you had it, nature could be counted upon to sustain its effects forever without further

intervention. The second presumption was that, because of the expense involved, the financing of overseas education would have to come overwhelmingly from public sources, reflecting either generosity on the part of the teaching country or a calculated investment by the taught. It is striking that, as these chapters demonstrate, neither presumption has turned out to be well-founded.

The first presumption, that overseas education could be thought of as a kick-start, has been disproved. The indigenous educational systems of developing countries have not been able to answer quickly the growing demands placed upon them. Indeed, overseas education serves as valid a set of needs today as it did 40 years ago, although the complexity of the continuing contribution is now much more fully appreciated than it was then. Not only does overseas education have many enduring justifications, but contrary to the second presumption, it has become a valued product, either a consumption or investment good, sought after by many private individuals in developing countries using their own resources to make purchases. The early, simple emphasis on public-sector opportunities was partly misplaced. Many private sector actors as well as governments in the developed countries, including universities, foundations, and corporations, have supported continuing flows of students from developing countries, whether to assist with their development process, to achieve social or ideological conversion, or to boost dwindling enrollments and fill teaching and research assistantships at home.

Meeting a Changed Reality

The conference that yielded the papers for this volume was prompted both by the sense that the realities of overseas education, some of which have changed gradually and quietly in recent years, have not been widely appreciated by those in policy-making positions, and also by the realization that, in the 1990s and into the twenty-first century, conditions are likely to change even more.

In the first chapter, Francis Sutton deals with the implications for overseas education of the *annus mirabilis* 1989, the year that saw the disintegration of the socialist bloc and a marked reduction in East–West tensions. On the one hand, these events led to the appearance on the world scene of a set of new developing countries (the former Eastern bloc), in whom the Western nations had a strong interest and for whom they felt a deep sense of responsibility. On the other hand, the end of East–West confrontation removed one of the foundations on which development assistance had rested. Simply, the disappearance of First and Second Worlds as meaningful concepts put into question the notion of a Third World. The development ideology of Western donors that had prevailed throughout the cold war could never be the same after the danger of losing the poor countries to communism had evaporated. Something new was needed in its place.

Sutton describes the evolution in development doctrine since World War II. The first period, ending with the revolutionary year 1968, emphasized the relatively simple objective of increasing gross national product per capita in the poorest countries on the grounds that sooner or later everyone would benefit from this phenomenon. The welfare of the poor and the security of the rich could be increased at the same time. Technical assistance and infusion of foreign capital, mainly into the public sector, were the mechanisms by which development would be stimulated, and overseas education, embodied in human capital, was perceived as one critical component of capital transfer.

By the end of the 1960s, however, much had begun to change: Events in Indochina, Africa, and Latin America had placed into question the motives of the rich countries in their relations with the poorer ones in both the North and South. Critics wanted to know whether or not development assistance was just a mask for continued exploitation. At the same time, questions were raised about who precisely was benefiting from development in the conventional sense in the recipient countries. Was it only the rich and powerful? The 1970s began an era when attention in the development literature shifted to the poorest of the poor as the object of concern, and skepticism rose about the role of elites, especially those trained in foreign countries. The success of the OPEC oil cartel in the 1970s in changing the pattern of distribution of global income and wealth shifted attention again toward systemic reform as a means of improving the welfare of poorer countries as an alternative to the capital accumulation emphasis of the 1960s.

The evolution of development ideology that began in the 1980s was, in a sense, a throwback to the early post-World War II era. The struggle with communism

was again given great prominence, and development assistance, including Western support for overseas education, was predicated upon the effect this might have on the loyalty of the recipients. A difference from the first phase, however, was a reduction in the faith that development would necessarily lead to attachment to democratic values or to the Western alliance. Rather, development assistance was used more narrowly by the Western countries to reward those nations that endorsed the free market as the path to progress or that sided directly with them in military and political struggles.

Rethinking Development After 1989

The dissolution of the old tripartite world that began in 1989 clearly ushered in another stage in development doctrine whose outlines can only be perceived today. A loss of faith in development as an instrument to achieve the improved economic welfare of mankind and the political empowerment of the masses, combined with the end of development assistance intended as a tool of the cold war, raises the serious question of whether there remains any compelling argument based on national interest for direct aid transfers from rich to poor nations. But even the classification of countries has to be rethought at this time, as does the nature of the relations among them. According to the neoliberal orthodoxy, under which many in nations rich and poor now live, market interconnections based on trade and investment are the most legitimate links among nations, and bilateral aid transfers have little legitimacy.

The reality of international interdependence in macroeconomic, environmental, health, and other respects seems the strongest justification that remains for aid flows. Problems in almost any part of the world are quickly spread to others by the vectors of trade, investment, migration, pollution, and disease. It is clearly in any nation's interest, therefore, to solve problems abroad before they come home.

In his magisterial chapter surveying these themes, Sutton illustrates how the notion of development remains intertwined with international relations, but with increasing complexity. Education is centrally related to both the acquisition of modern knowledge and the growth of strong national cultures, two elements in most contemporary definitions of development. This suggests that, if the goal of development is a community of strong nations, education for development retains a critical role. Sutton encourages us to explore the nature of this role and the place of overseas education within it.

Key Role of Personal Motivation

The chapters by William Cummings and Willard Shaw illuminate by example some of the realities of overseas education today: in particular, the volume of the student flow and the technological context within which that flow occurs. It is clear from Cummings' data that the largest proportion of students who study abroad do so with personal funds and for private reasons, and may have little connection to any philosophical ideology of development. They are, by and large, in search of individual self-improvement, and even though they may stay abroad and not increase the development prospects of their countries of origin, they do contribute to global development all the same. The article by Cummings demonstrates that any policy formed toward overseas education must take into account the overwhelming importance of the incentive structure at the personal level—especially the desire of individuals for status and credentials and of the units in the recipient countries to acquire skilled manpower—as much as larger questions of ideology and national foreign policy objectives.

Shaw, in a chapter that complements Cummings', illuminates some recent changes in the delivery mechanisms for overseas education. He reports that, with satellite technology, it is now possible to bring high-quality interactive communication to virtually any part of the globe. This technology raises the question of whether moving human bodies, rather than electronic signals, any longer makes sense. It also opens up opportunities for many kinds of innovative educational arrangements, such as degree programs in which course work is taken at home and overseas experience can be limited to only brief exposure abroad. A wide range of obstacles stands in the way of extending electronic communication for educational purposes, including cost, regulatory impediments, political and cultural resistance, and the perfectly reasonable conviction that something very important is lost when students are denied the experience of living in a foreign country. Moreover, many perceive that a

disturbing homogenization of intellectual life looms ahead if local educational systems give way to a global educational package beamed in from abroad. Finally, while improvements in communications technology may work against students pursuing overseas education, improvements in transportation technology (notably the jet plane) and global technological transfers are one of the main reasons for their increasing interest.

Distance Learning: A New Alternative

It was generally agreed that overall improvements in communications technology are more likely to supplement than to supplant overseas education. In addition to novel mixed programs with teaching carried out both at home and away, communications technology will facilitate follow-up support to those who have studied abroad and have returned, and in the form of "distance learning," may provide a third alternative and a safety valve for those who were not able to find access either to overseas education or to a home university. Evidence suggests that change in educational technology is deeply threatening to those who may suffer from its implementation. The breakdown of inhibitions among those who must cooperate in its success is at least as important as continued technological advance. Focused pilot projects and a better understanding of the nature of education may be needed before we can even take advantage of the technology we have in hand.

An issue that arose early in the conference discussion, and then rose repeatedly, concerned the impact on international student flows of the supranational organizations and the political and economic regional arrangements among nations that have been forming and reforming in recent decades. The European Community, the prospective North American Free Trade Area, and several structures in place or under discussion in Asia and Latin America all seem likely to shift the flow from traditional channels. Old relationships derived from colonial and political dependence may be displaced soon by these new connections based on post-cold war imperatives and geographic contiguity.

Drawbacks to Overseas Education

Visnawathan Selvaratnam's article reminds us of the sources of successive waves of enthusiasm for overseas education in the developing countries—first, to build up the local systems of higher education, then to offer an escape mechanism to those young people who could not be accommodated at home, and finally, to take advantage of the revolution in industrial technology through the acquisition of skills and knowledge brought back by returning students. Developing countries have, however, discovered a range of drawbacks to overseas education. Much of the training, they find, is in fact irrelevant, while, at the same time, returning students are alienated culturally and linguistically and are even led to form destructive sub-elites revolving around the foreign countries where they were educated. Also, the cost of overseas education can be staggering. Some developing counties have actually expended more on foreign scholarships than on their own higher educational systems. The next phase in the North-South educational relationship may see the South becoming increasingly careful to limit brain drain, curricular irrelevance, and excessive costs among their overseas students. Regional centers of excellence in the developing world may be one way to accomplish these goals by providing competition to the developed nations. An encouraging phenomenon was observed, especially in the 1980s, when some newly industrialized or democratized countries attracted home (after some years) a diaspora of students who had remained abroad after their education. In this way, they recouped very quickly the losses incurred earlier.

Investment in Human Capital

Economist Robert Evenson seeks to identify very precisely some of the contributions that overseas education has made to the welfare of developing countries, especially with respect to the third basis for enthusiasm (acquisition of skills and technology) described by Selvaratnam. Evenson distinguishes between location-specific technologies, such as those used for the improvement of local agricultural products, and manufacturing technology relevant to industrial competitors worldwide. Overseas education has contributed to improvement of the first kind of technology by making available specialized skills and facilitating cooperative endeavors such as the programs of the linked consortia of agricultural research centers. To take advantage of evolving industrial technology, developing countries have pursued two strategies: (1) close the economy, encourage import substitution, and resist most foreign contacts; or (2) import, imitate,

license, or steal any and all technology that may contribute to raising domestic output. Overseas education has proven to be valuable in both strategies, but especially in the second where returning students may be a direct conduit for the introduction of new ideas. In this light, higher education may be thought of as an investment with potentially very high rates of return for developing countries.

Walton Johnson's article deals with a unique case in the developing world, the small country of Namibia, which, for several decades, has been kept from development as a dependency of South Africa. Western countries assisted Namibia with the education of expatriates in the years before independence, but their main challenge lies ahead in recognizing and accepting distinctive Namibian national objectives and then assisting the young nation's future leaders to find overseas education that fits their needs, however these needs may be defined. This case illustrates that overseas education designed to strengthen a local system of higher education must take into account the premise that national goals may include political empowerment of the masses rather than merely the promotion of existing elites. In response to the contention that developed countries have a specific responsibility to promote democratic values in the countries whence students came, some conferees expressed unease because of the difficulty in determining how to do this beyond simply encouraging free inquiry and debate. Francis Sutton, returning to the main theme of his introductory paper, suggested that the security of democracy and pluralism worldwide may come to be the prevailing justification for overseas assistance in the 1990s, just as military security had been in the 1980s, and, consequently, the relationship was explored thoroughly.

New Tensions Leading to a New Rationale

Juan Gabriel Valdes, a conferee, suggested that, with the current crisis in development ideologies—repudiation of the old simplistic idea of progress on the one hand and the effective demise of old-style Marxism on the other—there is a need for new and more sophisticated notions of development that incorporate political and social values and quality of life. Such new notions should reduce tendencies toward cynicism and nihilism visible in some developing countries. In the development debate, a concern for democratic values and the environment will continue to meet head-on the single-minded orientation toward the elimination of poverty characteristic of the post-1960s era. Overseas education must come to terms with this tension. Some of the other conferees concluded that on this point there are reasons for optimism. With the end of the cold war, there may emerge a common global culture and set of values, as well as a new world order, to which overseas education can contribute a great deal. Colleges and universities worldwide may act both as places for debate over emerging values and as transmission points for international dissemination of the results. Valdes highlighted the importance of diversity of training perspectives and the risks of creating intellectual power elites.

The Case of Thailand

Four authors collaborate on a case study of the impact since World War II of overseas education on one particular developing nation—Thailand. The case cannot be the basis for easy generalizations about other nations because the circumstances of this country are, in many respects, unique. Nevertheless, some important insights can be gained.

Thailand is unusual among developing countries in that it has no colonial past. For much of its recent history, it has been a constitutional monarchy moving toward a pluralistic democracy. It has a rich and ancient culture with little xenophobia, is open to foreign study, and readily welcomes graduates on their return—even when they bring with them alien cultures.

The economic development strategy of Thailand moved from import substitution to export promotion, and the results have been impressive. The commitment by some external donors to Thailand's growth has been exceptionally strong and stable. The Rockefeller Foundation alone has contributed the equivalent of $40 million in 1990-value dollars for projects in health, economics, and agriculture. By and large, these projects fit within a long-range plan that was rigorously followed over the years. Overseas fellowships were provided strategically, in the main, for fields that were not well-developed domestically but had significance for growth policy. Although the Rockefeller Foundation's

university development program ended in 1975, its impact persists through the current university staff it trained and the academic values it instilled.

One of the principal challenges facing the Thai universities today is to retain their highly skilled, foreign-trained faculty from migrating to better paid positions in the private sector. Ironically, the private sector has benefited greatly from university contributions. It is most striking that Thai culture has been able to absorb and make use of the western university emphasis on research to serve its own distinctive national needs. The momentum of the early programs of support for overseas education was sustained even after the donors moved on to the fulfillment of basic human needs and other targets into which these programs did not easily fit. Evidently, it was careful programming and massive scale over an extended period that generated this momentum. This case suggests strongly that donors who flit amongst the latest fashions should be prepared for limited results.

Speaking for a Civil Society

The chapter by Jorge Castañeda explores the role of intellectuals as interlocutors between nations, and as a bridge between North and South. Intellectuals, he argues, should be the interpreters of ideas and the spokespersons for civil society. In recent years, in the developing world, nongovernmental organizations have taken the lead in expressing concerns for human rights, the environment, and pluralistic democracy. They have brought global concerns to the domestic debate, and have provided a conscience for their nations. They have been the restraint on oligarchies who would rule, in part, by keeping their subjects uninformed. But the pattern of support for overseas education in recent years has not operated to strengthen the intellectual communities of the developing world and nongovernmental organizations. The emphasis has been on technical and practical subjects—engineering, business, and applied social sciences.

The increased flow of young developing country scholars to the United States, rather than to Europe where the social sciences are more eclectic, has exacerbated a technocratic trend. And at just the time when these young nations need broadly educated leaders with a subtle grasp of social, political, and economic issues, they receive from abroad leaders with limited vision like the "Chicago Boys in Chile," or, at best, modernizing technocrats.

A familiar assertion by technocrats faced suddenly with an explosion of activity in civil society is that the ultimate implementation of true democracy requires repression of anarchy and a prior period of authoritarian control, just as in the Marxist schema the withering away of the state is preceded by the dictatorship of the proletariat. Perhaps the technocrats recognize subconsciously that they would be rejected as leaders by an electorate given a chance, and they put off the day when they must take the test. The function of overseas education in preparing the elites of developing countries for the complexities of leadership and the moral issues presented, rather than simply for the mechanical tasks of modernization, must be taken more seriously into account by those who allocate financial aid for overseas education whether in donor or donee nations.

The Aftermath of Success

This volume ends, as did the conference, with discussions of two of the principal modalities through which some of the most successful flows of students from developing to developed countries have occurred. Ralph Smuckler describes the character and evolution of interuniversity linkages. He defines the ideal type, and then reports the form that most linkages take today. He observes that it has been difficult to sustain mutual benefit for both parties in linkage relationships, in part because generational turnover within institutions erodes friendships and goodwill. Accordingly, it is not surprising that most linkages have not thrived. In the 1980s, however, both the United States Information Agency (USIA) and Agency for International Development (AID) began programs in support of university linkages, and the European Community has begun investigating linkages with the East. There is promise that in the 1990s this device will be given new trials and finally come into its own.

Abraham Weisblat's assessment of a set of exceptionally well-planned and well-funded fellowship programs seems tinged with irony. Although the programs he examines in depth, assisted by the Ford and Rockefeller Foundations, were resoundingly successful, they have been mostly terminated and have not been succeeded

by similar programs either from the original donors or others. Weisblat suggests that rising costs and the long time required for such programs to reach fruition explains their demise. Another conferee observed that such programs build up highly mobile human capital and quite understandably have been supplanted by institutional programs that require recipients to pursue an appropriate curriculum abroad and return home after graduation.

It must be remembered that the largest part of overseas education for development occurs when individuals in poor countries, by hook or by crook, find ways to go abroad and link up with institutions in developed countries that benefit from their presence. Public policy in this field does matter, however, and it is the hope of the authors of these chapters that the insights gained through their reflections on the past, present, and future of educational flow will help to enlighten those who must take action to relate this to the development process.

Chapter 1

The World in the 1990s

Francis X. Sutton

The Dissolution of Our Familiar Tripartite World

The *annus mirabilis*, 1989, changed not merely eastern Europe and the Soviet Union but the whole structure of the world we live in. Old, familiar vocabularies and habits of thought no longer inspire confidence and we must grope for new ideas and ways to label them.

When the vision of One World faded quickly after World War II, the ramparts of the cold war went up and there were two worlds, variously labelled as free and communist or capitalist and socialist—depending on where one stood. The ambitions of these two worlds to win the yet uncommitted minds of men in Asia and elsewhere led, by the late 1950s, to the emergence of a Third World of nations determined to avoid subservience or commitment to either of the others. Each of these worlds has had organizations and doctrines that derived meaning and coherence from a kind of dynamic equilibrium with the other two. The sudden and remarkable collapse of the East–West, cold war opposition could not leave the Third World unaffected, as indeed, events from Afghanistan to southern Africa to Central America have shown. With the concept of First and Second Worlds losing its coherence, it is natural to ask if the term "Third World" still has any meaning.

The conception of a Third World, set over against two others, has been a political conception of disputed meaning and reality. The term appeared after the 1955 Bandung conference brought together an array of leaders of non-Western countries. Its identification with neutralism or nonalignment was rather overemphasized by the exertions of the moralizing American secretary of state of the time, who cast his anathemas on those unready to commit themselves for or against communism. But the tone of the Bandung conference was more anticolonial and anti-imperialist than neutralist. The presence of Chou En-Lai and the ultimate rejection or muffling of moves to condemn the Soviet Union for its domination of Eastern Europe gave a certain asymmetry to the posture of the fledgling Third World towards the other two.

The Bandung conferees and their successors in later venues wanted universal equality, an end to racial discrimination, and economic development; these claims were more clearly addressed to the western than the communist countries. There was, too, an asymmetry in the meaning of affiliation, which was clear and fateful on the communist side, but more flexible and ambiguous on the other. In sum, the Third World has been more clearly defined by its opposition to the First World than to the communist world; the nonaligned movement could meet in Havana and find support in the United Nations and elsewhere from the communist countries. It is thus not clear that a weakened opposition between First and Second Worlds means a weakening of the Third World, though it certainly must become something different from what it has been.

The idea of development was also, in some important respects, an invention of the cold war and must be affected by its demise. Nation-states that counted themselves part of the Third World had come by the 1950s to regard themselves as developing countries, distinguished from richer developed countries—a distinction they were encouraged to make by the developed countries. This classification of nations around the idea of development has been not merely descriptive, but normative; it has been a guiding principle of international relations, with expectations and obligations being placed on nations according to their stage of "development." Although the cold war was not the only impetus for this development ideology, reaction to the challenges of communism was clearly a major stimulus to its rise and its expression in programs and organizations for international development assistance. Communist countries might in some analytic sense be "developing," but they were not embraced in the programs of the free First World. Insofar as development assistance was a response to communist challenge, its future is evidently threatened.

Changing Definitions of Development

There are other reasons for the fading significance of the classification of countries as developed or developing. There was a time when these terms roughly corresponded to a distinction between industrialized and "preindustrial" (or rich and poor) societies, though there were always anomalies: European countries such as Portugal and Romania were heard to protest that they were not accorded help as developing nations, while Argentina and Brazil were. Over the years, commonalities among the developing countries have become less clear. Paul Krugman, in a recent paper, noted that there was a time when developing countries shared economic backwardness and the common role of primary product exporters in the world economy. By the end of the 1980s, he found that these nations still shared a relative poverty but were divided into at least four groups, each having very different roles in the world economy: (1) inward-looking primary exporters; (2) wards of the international community; (3) new manufacturing exporters; and (4) problem debtors.[1]

Public international agencies and national governments are usually more conservative in their categorization, but in this case we find the World Bank and others forced into making complicated distinctions. In the *World Development Report* (1989), the bank provided an interesting comparison of its own classification with those used by the International Monetary Fund (IMF), the United Nations (UN), the United Nations Conference on Trade and Development (UNCTAD), and the General Agreement on Tariffs and Trade (GATT).[2] The basically similar classifications of these organizations might conflate to the following: (1) industrial market economies or countries; (2) developing countries or economies; (3) (major) oil exporters; and (4) centrally planned or socialist economies.

The bank's addition of China as a major client put an end to its older use of the fourth category, which disappeared from its tables after 1986 and was replaced noncommittally by a category for "nonmember, nonreporting countries." More generally, the riches of major oil exporters forced a distinction between them and "developing countries," whatever their state of advancement in other respects.

Unlike the sudden change in the boundaries between industrial market and socialist economies that the 1980s have brought, the blurring of distinctions between nations on the basis of their state of development has been going on for at least a couple of decades. In its beginnings as an ideology of international relations, development was a collective matter, measured by the progress of nation states. It was always marked by concerns for the relief of poverty and deprivation, but by the end of the 1960s—perhaps in the wake of that other *annus mirabilis*, 1968—these concerns assumed new salience and autonomy. The emergence of programs that addressed basic human needs and reached toward the poorest of the poor signalled a departure from older conceptions. In his valedictory address at the World Bank, Robert McNamara distinguished two meanings of development: the relief of "absolute poverty" and the economic growth of nations. The practice of development assistance programs in recent years has departed from the older focus on governments and their plans, giving much attention to private voluntary organizations, community organizations, and grassroots activities. In this way, development has become less a matter of relations between national states and more a matter of concern with the welfare of collectivities, some national, some not, and of individuals.

Development as a principle of international ordering was further weakened by the dissolution of a consensus

on development ethics and strategy. The older development economics shared with Marxism-Leninism an emphasis on insulated, controlled, and planned national economies, with foreign capital aid and technical assistance supplementing the resources of the developing countries themselves. By the 1970s, a consensus between developed and developing countries built around these views fell apart. The Third World countries pointed to inequities and dependencies in the international setting, called for a new international economic order, and continued to insist on control of their national economies. The western countries were increasingly critical of Third World governments on the grounds of equity and human rights, and, by extension, of these governments' sovereign control of development strategy. Albert Hirschman, in a famous essay, found the old development economics wounded by political disasters in the Third World and by poor income distribution.[3] Indeed, the old faiths went into serious decline. Radical voices in the Third World were heard to denounce the very concept of development, and conservative ones questioned the bases of any special economics for developing countries. The World Bank and the IMF, reacting against despairing voices proclaiming that "failure is the expected norm in development,"[4] joined forces in a study showing that development aid does in fact give positive results.[5]

There has, in sum, been an erosion and now a sudden collapse of the familiar bases by which the nations of the world have been grouped and classified. The familiar tripartite world fades, and we are in a new period of fluidity and uncertainty, with statesmen and plain citizens groping for new ways to view the world. The suddenness of the unforeseen 1989 upheaval humbles us with a sense of the difficulty of predicting what may lie ahead. Vaclav Havel was asked, on a recent visit to New York, why 1989 had been eastern Europe's year; he said he simply did not know, as befitted a man who has scorned the "vain minds of those who were convinced they understood everything, that there was no higher institution above them, and that they were in charge of history."[6] But just as the difficulty of predicting the timing and epicenters of earthquakes does not undermine our faith in plate tectonics, we must hope that we can discern persisting forces behind unpredictable events.

Two features of the revolutions in Eastern Europe and the Soviet Union stand out as possible guides to the future. One is the prospect of a diminished role of military force in international security; the other is the emergence of assertive nationalisms. The great affairs that preoccupy statesmen, East and West, were focused on security matters—the future of the North Atlantic Treaty Organization (NATO), the course of arms-reduction agreements, and the implications of German reunification—even before Iraq's invasion of Kuwait. No one supposes that security will be a diminished concern of nations or that military strength will be lightly regarded, but the domination of security concerns by military affairs (a feature of the cold war) seems to be easing, with security seen in more complex regard for economic and other factors. If reminder is needed of the importance security has long had in relations with Third World countries, the prominence of military assistance in U.S. foreign aid programs may be sufficient. Security will remain central, but changed conceptions of its bases will surely have important effects on emerging patterns of international relations.

Emergent Nationalisms

There has also been an unveiling of nationalist fervor in the events of the past year. The national and ethnic passions that have brought nullification and secession decrees in the former Soviet republics and have led journalists to write abusively of the Soviet "Disunion" have been paralleled and stimulated by the example of the eastern European countries. The supposed solidarity of socialist countries over against the capitalist world has proven to be no match for the ties of birth, language, and common culture. But more than nationalism has been at play. The passion of the eastern European countries to rejoin Europe or to recreate a Mitteleuropa has become a competitor, beloved of intellectuals, to the narrower nationalisms that have arisen. This sense of a common European culture in political ideas, intellectual matters, and styles of everyday life is a major influence in what has been happening. And, in this sense, the failure of the Soviet Union to hold the loyalties of eastern Europe has been a cultural failure. Generalizing, one may suspect that the weakening of the old classifications of countries may bring us more than ever into a world of nations, but also a world in which common cultural ties have

greater force. It is one of the tasks of this paper to explore such questions.

The focus in this paper must be on a limited number of the myriad questions about emerging new orders—or disorders. A special concern is the relations between what have been the developed and developing countries, with particular regard to education and culture. We must try to understand what the motivations and policies of nations may be: What will be the interests and motivations of the rich nations of the Organization for Economic Cooperation and Development (OECD) in their relations with other parts of the world, and what conversely will be the attitudes and expectations of these others? There is much going on that has escaped the control of policy and will presumably continue to do so. Education, the acquisition of modern scientific and technical knowledge, and the shaping of national cultures have been national concerns everywhere, but they have had dynamics of their own that have made them elusive subjects of policy. We must seek an understanding not only of what nation-states will try to do, but also of the forces and cultural influences that underlie the relations of national states.

International Relations in an Open, Cosmopolitan World

The observation that the peoples of the world now live increasingly globalized in surging flows of communication and mutual awareness is banal but fundamental. Druse militiamen in the Lebanese Shouf want to know "who killed J. R.," while the Dallas citizenry entertain themselves with Greek food festivals and Japanese tea ceremonies.[7] This globalization began a long time ago during the spread of the European hegemony and has accelerated with the progress of technology and the world economy. It has, in one respect, been a "World Revolution of Westernization," as Theodore von Laue entitled a book on the subject.[8] It has brought awareness of other ways of living to individuals and nations, arousing aspirations and revulsions. Europe has become eagerly but discomfitingly Americanized and new Europeanized styles of life invade the United States, while the eagerness of the Japanese for cultural imports remains unabated despite their payments surpluses. A cosmopolitan culture of many parts exists, deriving largely from the richer and more envied societies, but taking in elements of varied and exotic origins. The seductions of this cosmopolitan culture and of life in the western countries, displayed on television, film, and paper to the peoples of eastern Europe, fueled the 1989 revolution; similar exposure has been exciting and disturbing people around the world for many years. Much of the history of the last century can be seen as the result of efforts to respond to such incitements, to remove invidious distinctions—to keep up or to catch up. The countries of the West eye one another in nervous competition. Elsewhere, from such vast nations as the Soviet Union, China, and India to impoverished mini-states, governments have attempted to guide and control successful responses to the challenges of international example. They have had widely varying successes and failures in efforts that have been sometimes heroic, but too often tyrannical. There is no reason to suppose that this striving and international competition will be any different in the 1990s. Strategies and the meaning of development may have changed, but the tendency to compete with other nations and the goads of relative deprivation remain unchanged.

The openness of a globalized world has brought not only tensions and invidious comparisons, but the necessary conditions for a richer world. In these years of pessimism, it is worth recalling the remarkable progress that has been made. Lloyd Reynolds has marshalled enough supporting evidence to call the period 1950-1973 the "greatest boom in history,"[9] a period of progress spread widely across richer and poorer countries. While growth slowed after 1973, it did not stop, but continued at better averages than the older industrial countries showed before 1950. Amid this rapid and general progress, there has of course been unevenness that has heightened the competition and invidious comparisons among nations. There has been both convergence, with Europe and Japan closing the gap with the United States and the newly industrialized countries chasing after them, and divergence, with regions like southern Asia and Africa lingering at low levels or showing actual declines and with mounting disparity between western Europe and the countries to the east. There have been enough spectacular successes to nourish continued faith in the possibility of rapid progress and enough stagnation or decline to provide cautionary tales of how things can go wrong. The conditions of economic progress now look less evident than they did during

the first enthusiasms for development, but acute interest in discerning and providing these conditions persists.

Since the revival of interest in the study of economic growth after World War II, scholars have given abundant confirmation that the application of modern knowledge in science and technology has been at the heart of progress. Leaders and common people around the world have hardly needed scholarly studies to make them share this conviction. The United States, in its postwar eminence, proclaimed the spread of modern knowledge as the true path to progress for the entire world. Thus President Truman, in his Point IV address, stated: "For the first time in history, humanity possesses the knowledge and the skill to relieve the suffering of . . . more than half the people of the world [who] are living in conditions approaching misery." The listening world had long been aware that national power rested on modern industry and sought the knowledge and skills to build and sustain it. In the years since World War II, such pursuit has been hastened and universalized in vast proliferations of education, research, and technological development. This pursuit of a basically common culture shows no signs of slackening.

Much more than technological advance produced this "greatest boom in history." Appropriate international openness was also essential, and the successes of the Bretton Woods institutions, GATT, and the European Economic Community (EEC) in expanding international trade and investment have been unmistakably important. National policies, the quality of management and labor forces, and the presence or absence of minerals under national territory have made large differences in growth rates too. But technological change has been crucial, and not only for industry, as the triumphs of the green revolution in agriculture have shown. A great part—probably the largest part—of this technological change has come in the diffusion of known technologies, as industries were developed in places where they had not been before.[10] The quickening pace of scientific and technical discoveries has brought new technologies and new products, notably in electronics, computers, and pharmaceuticals. But the spectacular growth of Japan and the East Asian "baby tigers" has depended heavily on the exploitation of older technologies (textiles, steel, automobiles, shipbuilding, etc.), and the presumption is that such must be the path of progress for most or all countries. In short, the international diffusion of modern knowledge appears as a crucial determinant of economic progress, and the capacity to absorb what is known internationally and adapt it to local conditions is essential.

The nations of the world have been eager to avail themselves of these means of progress and indeed have regarded access to them as their right. For the poorer nations, the development ideology proclaimed a way to do so while protecting their autonomy. The collapse of colonialism after World War II brought a large new array of sovereign nations and exposed their peoples to international comparisons as they had not been before. The right to self-determination was an egalitarian ideal that brought in its train claims for equality in well-being and regard. The development ideology incorporated a basic claim to cultural equality and held forth prospects of economic growth to meet what Tocqueville called "the restless striving that equality begets." It proclaimed that the means to development could and should be free of cultural imperialism; as such, it was an ideology of cultural neutrality, giving to all peoples the right and the capabilities of development. Like all ideologies, it was a gross simplification and distortion of more complex realities, yet powerful in its effects. The vision of development, with the rapid changes it has brought, may have generated turbulence and international tensions, but it has survived the decline of orthodox faith in the old doctrines and a search for a replacement will go on.

The international policies of nations will certainly continue to be concerned (as they are now) with advancing and protecting their individual interests while seeking to preserve the openness that the conditions of progress demand. But openness and globalization bring much that springs not from policy, but from the stirring of affected populations.

The wresting of peoples from unquestioned, traditional ways of life has everywhere produced stresses on individuals and their societies. Any striving beyond fixed prospects opens uncertainties and shifting identifications. In a globalized world, there is a spread of possibilities from rootless cosmopolitanism to the traditionalistic reactions we now vaguely and rather indiscriminately call fundamentalism. Social scientists in our time have had rich subjects of study in the changing character of local, tribal, hierarchical, lin-

guistic, and other loyalties. The nationalism of the contemporary world has been given much of its strength by populations loosened from their ancient moorings, but the construction of nation-states has been troubled both by lures beyond their borders and by adherence to tribal, linguistic, and religious identifications. The political history of the Third World has been notoriously full of internal difficulties that have spawned military and other authoritarian governments and spilled over into international conflicts. Democratic governments giving representation to varied loyalties have been infrequent and precarious, and authoritarian tendencies have been fed by clinging to whatever loyalties could be found. In the cold war era, the superpowers were fatefully drawn into Third World turbulence, despite the complaints and efforts of the Nonaligned Movement to keep them out. With the ending of the cold war, we may hope for no more Vietnams, Afghanistans, or American presidencies spoiled by ill-fated engagements with the Third World. But continuing disturbance to international security caused by Third World countries' difficulties in finding political stability seems inevitable.

There is indeed reason to believe that, in a broad sense, security concerns reaching beyond military affairs will assume new prominence in the relations of North and South and be rather more particularized than in the cold war past, depending on proximity, economic significance, and cultural links. A more pronounced concern with near neighbors is already evident and deserves our particular attention.

The attractions of the wider world have competed with national loyalties in many ways. Internal mobility that has produced rapid urbanization all over the world has spilled over into international migration of troubling dimensions. A disposition of the poor to move toward the rich seems universal--it has even been found among African tribes. East Germans running around the Berlin wall and ultimately climbing through it were doing what millions from different places, in different ways, evidently want to do. The largest numbers, nowadays, come from developing countries, and their migration is less confined by the walls or other devilish devices that were used to keep eastern Europeans from fleeing their countries than by the barriers imposed by the nations that are their goal. Among these migrants, the humble poor are the most numerous and they have been moving in the millions, legally and illegally. Latin American and Caribbean migrations to the United States, North and black African migrations to Europe, and Near Easterners and Asians to both goals have become major subjects of political concern. The plight of Asian migrants in the oil-rich countries of the Persian Gulf has been one of the most poignant consequences of Iraq's aggression. And there have been vast migrations elsewhere.

The restlessness produced in poor countries by the experience or dream of migration is often only dimly seen by those of us who live in the rich countries.[11] But the troublings eager migrants bring to Europe and America are regularly on the front pages of our newspapers. Our American problems of policy and conscience over Mexicans, Haitians, Salvadoreans, and others are painfully familiar. In Europe there are perhaps even more popular disquiets and agitations in public life. Italy and Spain fear and resist inundations; the Le Pen movement disturbs French politics; issues of refugee asylum, assimilation, and the status of long-term *gastarbeiten* arise throughout western Europe. Pressures are more acute for non-European migrants but not confined to them. Jubilation over the East European revolutions has brought nervous reporting about the multitudes that dream of going to the West and a stiffening of visa procedures.[12] On the other side of the globe, the Japanese have already had to struggle with Chinese boat people, and an estimated 100-150,000 illegal immigrants have slipped past Japan's barriers, arousing worries about the potential of huge East Asian pressures.

The disparities in rates of population growth between rich and poor neighbors promise only an aggravation of these tensions, as does the increasing ease of communication and international travel. For both rich and poor countries, the lure of migration and greater opportunity represents problems that are particularly acute for near neighbors. The United States concerns itself with Mexico, Central America, and the Caribbean as it does not with more distant areas, and Europe must look across the Mediterranean with special concern: Italy, France, Portugal and Spain are now nervously organizing a forum for regional cooperation in the Mediterranean with the Maghreb countries[13]. Nations must be concerned with the political stability and economic health of close neighbors, and the presence of migrants in their populations raises cultural questions that test their own character as

tolerant, liberal societies. Security and cultural questions accentuate the present tendencies toward regionalism, but they have wider effects too, both internally and externally.

On both sides of the Atlantic, a sense that the distinctiveness of nations lies in their character as liberal, egalitarian democracies has grown in recent years and has logically brought greater tolerance for domestic pluralism. In the United States, the old insistence on Americanization and the melting pot has yielded, particularly under the impetus of the black civil-rights movement and Hispanic immigration, to ethnic revivals and a new legitimacy of cultural diversity. In Europe, fear of old warring nationalisms has given liberal, democratic emphases to the EEC and in similar logic brought tolerance of cultural diversity. In neither case has tolerance of cultural diversity been free of problems. The quarrels in the United States over bilingualism, school curricula in New York State and elsewhere, and the content of civilization courses and literary canons in the universities resound with public debate. Europe has had similar debates and contentions; Britain has had its liberal 1985 Swann Report on education and multiculturalism but, like France, does not escape quarrels over Muslim girls wearing veils in schools.

Challenges of Cultural Diversity

The ideals of pluralism and multiculturalism now established in the liberal democracies obviously have attractive potentials for international relations. They represent a sympathetic acceptance of cultures different from the dominant one within the bosoms of these countries, and, as such, go beyond the tolerance for cultural variety in foreign places that was part of the ideologies of self-determination and development. The new pluralism offers a basis for interest in other cultures beyond their relevance to the behavior of foreign states—a motivation that was central to the promotion of academic area studies in the United States and elsewhere. It also nourishes a revival of idealistic hopes that mutual cultural understanding may be a basis for a less contentious world.

The stresses that come with domestic pluralism may cast shadows on these hopes. Europe has had more aggressively antiforeign movements than the United States, but, as Lawrence Fuchs has written, there is a "Challenge of Pluribus to the Unum"[14] here too. The challenges to dominant cultures have characteristically come from those who have felt themselves disadvantaged, ignored, or humiliated—from blacks and other minorities, from some religious groups, and from the women's movement. The tolerant, liberal disposition to recognize these groups' claims often does not satisfy their demands on public policy and practice. Conflicts as spectacular as that raised by Salman Rushdie's book, *The Satanic Verses*, are perhaps exceptional, but there are regular demands that challenge the values of liberal pluralism.[15] In education, such demands bring the "particularism" that Diane Ravitch has recently deplored[16] and bring heat to curricular debates. But the implications for international relations are not clear. The identification of minority groups with foreign areas, such as the new label of blacks as African-Americans or the rise of Third World groups on American campuses, raises interest in other parts of the world that might otherwise be enfeebled. It is very difficult to assess what these internal contentions of the liberal democracies may lead to, but on balance they seem likely to enliven international cultural interests.

Globalization and the migratory pressures it has brought have thus strengthened the relevance of culture in shaping international relations. They have brought a broadened array of security concerns too. Openness in the international order certainly does not extend to easy migration. But openness for trade and investment means interdependencies with distant places and corresponding anxieties over security. Memories of the oil crises of the 1970s faded a bit in the 1980s, but Cassandras warned regularly of new crises before the current one* burst upon us. Elementary calculations make the Middle East a particular focus of concern, and it is reinforced by Arab-Israeli irreconcilability. The large fraction of U.S. foreign aid, both military and economic, that goes to Israel and Egypt reflects a security concern. The scale of this effort is heightened by the U.S. cultural tie to Israel, but there is an obvious broader concern with domestic and international stability throughout the region. It is a reminder that foreign aid programs do not need the threat of communism to be driven by security concerns. Such concerns are indeed pervasive and bewilderingly complex in their variety. Some of them take a clearly military form, as in the current anxiety over

*A reference to the Persian Gulf crisis of 1990–91 [Ed.]

Third World ballistic missile capabilities and nuclear proliferation. Others focus on domestic political systems, stability, and economic capabilities, and they extend beyond close neighbors to faraway places.

It is perhaps true that international relations are always basically shaped by security concerns, and it is not surprising that they should continue to be central in a post-cold war world. It seems clear, however, that security concerns will have a different and more complex form in coming years and be more intimately related to cultural matters. As East-West differences have fallen away, something like a new ideology of international relations is emerging that envisages a secure and prosperous world based on common cultural conditions. This new or revived ideological tendency is winning common acceptance across the northern part of the globe and is shaping policy toward the rest of it. What policies may flow from it and how acceptable it may be in the old Third World should be examined, but first I will try to show the outlines of this new ideology.

The New Ideological Emphases in the North

Interdependence and globalization now set the conditions and character of international relations. The notorious constraints on sovereignty that interdependence has brought have a counterpart in a growing intrusiveness of foreign policies. Trade negotiations in the so-called "structural impediments" talks between the United States and Japan delve into such intimate domestic matters as the structure of retail trade and inducements to private saving, and there are comparable issues in negotiations among the European states and between Europe and the United States. The uncertain progress of the Uruguay round of trade negotiation has been blamed in part on the inability of the GATT forum to reach into domestic policies at a time when interdependence has made the distinction between domestic and international policies obsolete.[17] Indebtedness and foreign exchange crises have, in other contexts, made nations less able to resist intrusions on their domestic policies. The powers of IMF conditionalities and World Bank structural adjustments are now regularly exercised on Third World countries. Other conditionalities have been imposed as well. Human rights and political freedom have become criteria for granting foreign aid—to China, to long familiar sites in the Third World, and now to eastern Europe and the components of the former Soviet Union. Recently, a junior minister in the German aid ministry even proposed a general doctrine of political conditionality as a criterion for foreign aid.[18]

The old cultural neutrality of the development ideology has been greatly weakened by this rising intrusiveness. While cultural autonomy is not attacked in principle, its scope is restricted; in important respects, nations are pressed to conform to general standards. The distinction between developed and developing countries has promoted indulgence for the latter, not only in concessional aid but in special treatment under GATT agreements. The neoclassical revival has undermined the bases of distinction, bringing claims that Third World countries would have benefitted from the discipline of conforming to GATT rules and have been hurt by special treatment.[19] There are differences in emphasis, with the United States often in the lead, but there is a general tendency to insist that developing nations behave and be treated like any others. The 1990 special session of the UN General Assembly on International Economic Cooperation illustrated the situation sharply in what the United Nation's own, officially optimistic development forum had to describe as a "difficult" session. The U.S. ambassador said his country had only agreed to participate with "a great deal of reserve and with very considerable skepticism"; he declared that the United States did not wish to continue the development debates of the last three decades.[20]

Old Debates in New Terms

The old principles that divided the world into developing and developed countries and insulated the former from intrusions and demands are thus now assaulted publicly and officially. But they do not simply die away. There has always been an element of eleemosynary concern for the poor and deprived in the motivations of development assistance and, as we have noted, this concern has come to prominence since the 1970s in the aim of relieving absolute poverty. Paul Krugman's unflattering classification, "wards of the international community," has been in some sense long implicit in the U.S. policy of cut-off levels for concessional aid. Poor countries have not ignored such policy, as witnessed by the recent travels of foreign ministers from Bangladesh, Somalia, Sudan, and Togo on behalf of

the world's 42 poorest countries and the second United Nations conference on the least-developed countries being held this year in Paris.[21] There is reason to think that a sympathetic concern for the poorest countries, like that for the victims of disaster, will persist in the rich countries, and those poorest may escape some of the exactions and intrusions imposed on those better off.

In this limited sense, old patterns will persist, but with relations dominated on the side of the rich countries by the security, economic, and cultural concerns described above. A much more particularized set of relations seems likely to develop, but within a general pattern that has been emerging and that has been given new strength by the climactic changes in the Soviet Union. In the foreground of this pattern are free-market and democratic ideologies. The conversion of the Soviet Union to these doctrines as a basis of international security and economic progress has been given repeated and dramatic emphasis, not least in Foreign Minister Shevardnadze's defense of the "loss of Eastern Europe" at the recent Communist Party Congress. The Soviet conversion has given the force of common "Northern" orthodoxy to doctrines that seek the basis of security in democratic institutions rather than in blocs and military strength. The belief that democracies do not war against one another has been growing throughout the Western world and has supported faith that the propagation of democracy is the best guarantee of security throughout the world.[22] Now, with Soviet concurrence, it is gathering strength as prevailing ideology.

In a curious way, this ideology is a revival of the vision of "One World" that the 1939-45 war against the fascist powers stimulated: a world that would be secure because democracy is a barrier to military aggression and that would be sustained in common progress by general participation in an open, worldwide economy.[23] The new intrusiveness I have emphasized shows particularly in emphases on the structure and management of economies and on democratic governments and freedom. (One has heard Africanists complain that never has an international ideology so dominated the continent as structural adjustment does now). Abstractly put, it is a movement seeking common institutional patterns throughout the world, and, if it is to be achieved, it will require the conditions that support such institutions, thus, to some degree, common cultural conditions. Beyond changes in government and economic organization, one must look for cultural development that can sustain them. The old development ideology, particularly in the political agnosticism that marked it in the 1960s, could be firmly technocratic and culturally neutral, resting in the optimism that economic growth would bring along the rest of what was wanted. The new ideology can hardly be so, and it is not.

What this new ideology may generate in policies and practices will engage our attention a little later. But its prospects must be judged against a view of the present state of the Third World. Matters are very different there, and the readiness for new conceptions of international relations much less evident.

Culture and Ideology in the Third World

The breakdown of the international consensus on the old development ideology has been accepted with much more equanimity in the developed than in the developing countries. It was the latter who promoted the 1990 UN special session and they, unlike the American ambassador, did not want to end the development debates. They wanted to continue to be treated as developing countries; and if their plight was left unattended, they foresaw "risks of perpetuating an essentially unbalanced and unfair international economic system" with consequences "terrifying to the vast majority of the world's people."[24] Recourse to large gatherings like a UN special session to advance claims and sound alarms has been a typical tactic of the Third World, which seeks to use numerical weight. This bespeaks a sense that the weak must hang together and a reluctance to face the world alone, yet also an emotional sense of common condition that goes beyond tactics.

The reality of a Third World has sometimes been questioned. The countries claiming allegiance to it have always been diverse and divided, as they were at Bandung. And as history has moved the nations differently, diversity has increased. The freeing of Eastern Europe and *perestroika* in the Soviet Union have brought a new surge of nationalism and encouraged the expectation that we will be living more than ever in a world of sovereign—or would-be sovereign—nations. The new or revived Northern ideology of openness and democracy puts pressure for responsibility on indi-

vidual countries, but it meets stubborn efforts to respond collectively. The theme that there is something fundamentally wrong and unjust in the international system runs constantly in such gatherings as the Special Session, like the pitch in a Byzantine choir. It was heard more loudly in the 1970s, when demands for a new international economic order were asserted with more confidence, but it continues in spite of the diversification that has complicated and eroded the old classifications of nations. It may have to change its name, but the Third World has been and remains an important emotional and hence a political reality, held together less by its organizations and conferences than by a sense of common condition. This sense of common condition has been expressed in many forms, with antipathy to colonialism and imperialism the most ready at hand. In one of their more exuberant moments, the nonaligned countries could declare the "quintessence of the policy of non-alignment . . . involves the struggle against imperialism, colonialism, neo-colonialism, apartheid, racism including Zionism and all forms of foreign aggression, occupation, domination, interference or hegemony, as well as against great-power and bloc policies."[25] The rhetoric has since quieted, but the old antipathies and resistance to intrusions by the West and the great powers persist. In the current Middle Eastern crisis, where Saddam Hussein's aggression has brought denunciation from a great majority of Third World countries nervous about their own boundaries, there are persistent calls to have the Arabs work out the crisis themselves. New visions of collective security that Soviet-U.S. rapprochement have brought are troubled by apparent discomforts in accepting great-power leadership, even when firmly within the United Nation's auspices.

The sense of common condition that has produced Third World solidarities has been rooted in the common experience of seeking to absorb modern competences while preserving autonomy and self-respecting cultures. The collapse of communism in Eastern Europe and the Soviet Union has weakened one of the major ideological props of the modernizers and it has come at a time when fundamentalist movements have shown new strength. Third World responses to the emergence of new ideology in the North will depend on changes these events and movements have brought.

Continuing Appeal of Marxism

Like Mark Twain, Marxists have reason to complain that reports of their demise are exaggerated. The appeal of Marxism that brought communist regimes to two of the world's largest nations and a few smaller ones seems too pervasive to be snuffed out by displays of spectacular failures and embittered resistance to communist regimes. Marxism has been more than the official ideology of communist regimes and communist parties, diffusing through much wider populations and coloring the public political and intellectual life of nations. Even superficial exposure to student populations in Latin America, Asia, or Africa reveals sympathies and convictions too popular to disappear quickly. It has long been evident that Marxist ideas have had a special appeal on the periphery of the West and beyond, and that the old paradox of Marxist appeal before the class conflicts of industrialism was in fact no paradox at all. As students of modern Chinese history have long taught us, Marxism has provided a way of coping with the attractions and resistance arising from Western intrusions and dominance. It will hardly pass away while the powers and attractions of what "the West" has stood for remain as sources of emulation, humiliation, or plain ambition.

The sudden deflation of communism nevertheless promises to accelerate changes that were long in the making. Perhaps the most important of these has been the weakening of confidence in governments' competences and benevolence, a weakening that has been going on at least since the 1960s and has spread over much of the world. The Communist states have represented in polar form a set of historical developments that have been much more widespread. They have claimed superior representation of popular sovereignty for hitherto oppressed and exploited peoples and on this basis have justified pervasive control of the domestic affairs of nations and their relations with the outside world. Such claims, in more or less diluted forms, have also been widespread in noncommunist countries. The egalitarian movement in the post-World War II era brought homage to the sovereign rights of peoples to self-determination and resulted in governments of great initial authority as legitimate spokesmen of their people's rights and as agents of their aspirations. New nations experienced the exhilaration of escape from past humiliation and oppression;

national sovereignty became the symbol of basic equality with all. In the eyes of the world, this thrust to equality gave moral authority and indefinite scope to the claims of new governments. The "statist" character of development efforts in the 1950s and 1960s is now fashionably deplored, but, in the temper of the times, development could hardly have been otherwise conceived. "Socialism" in diverse and frequently vague forms became Third World orthodoxy, resting firmly on egalitarian ideals and the prestige of government.

Insisting on Cultural Autonomy

The collapse of communist prestige can only hasten changes toward lessened government control and greater openness to external influences. But there are evident limitations to the intrusions of "Western" policy and ideology. Resistance and resentment have been provoked by conditionality, adjustment programs, and criticisms of human rights abuses. An insistence on sovereignty and cultural autonomy persists through invasions of the cosmopolitan culture. It has been one of the distinctive features of the communist regimes that they have unashamedly exercised rigorous controls on these invasions in the name of national sovereignty, as Cuba continues to do in its jamming of Radio Marti. But it is important to remember that the practice has extended beyond communist regimes: In Nasser's time, it was illegal for Egyptians to read unapproved foreign publications, and the widespread Third World support for a "new international information order" has displayed convictions that some sort of national "privacy" is a just aspiration. The right of self-determination has clearly been more than political; as I have said, in the canons of development ideology, foreign importations had to be free of "cultural imperialism" because self-determination demanded it. The developing countries had to gain new knowledge to modernize, but not at the price of abandoning their souls. Nations and their governments have thus had moral support for efforts to control what the international ambience brings to their cultures. In a time of undiminished nationalism, there is no sign of abandoning this claim for cultural autonomy. Doctrines of openness and freedom put restraints on what governments can legitimately do, but the right of nations to be distinctively themselves remains as an international principle.

There thus can be no return to undiluted cultural imperialism, regardless of the present Northern dispositions to press openness and cultural uniformity. But no serious policy carries the aims of cultural uniformity so far as to seek the obliteration of cultural differences, within or between nations. The aims of policy recognize boundaries beyond which insistence on commonalities invades legitimate differences. The national integration which Third World nations seek for their own stability and progress must be based on national cultures that are shared by their citizenries. And since a nation's stability and progress is of international concern, there is a basis for international interest in the quality of a nation's national culture. The fact that national cultures are now inevitably amalgams of introduced and indigenous elements gives ready bases for international cooperation. Development ideology used the common desire for useful, modern knowledge as a legitimate basis for entering into the shaping of national cultures. The continuing desires of nations to be treated as "developing" offers opportunities for continuing forms of cooperation. The degree to which cooperation may extend into cultural areas that are not evidently technical or economically useful is less clear, but we should remember that development assistance has, in fact, extended into such domains in its support of education and research, as long as there was national assent and control.

The revived concern to spread pluralist democracy means that the Northern countries will be more interested than in the past in cultural changes in Third World nations and will be concerned with the conditions that make pluralist democracies possible. It is evident that these are exacting conditions, as we have seen in the strains pluralist tolerance is now producing in Western countries. The sharpness of ethnic, religious, and other divisions in Third World countries are commonly more severe than those the Western countries now face. A common effect of widespread fundamentalist movements is to reject pluralist tolerance as a legitimate ideal, and there are similar rejections in more "modernist" forms. Just as ethnic groups and some feminists in the Western world have insisted on a radical difference between their views of the world and the conventional or "dominant" ones, so Third World spokesmen insist on having exclusive

conceptions that are not accessible to outsiders or compatible with other, especially "Western," views. Extreme views that amount to cultural solipsism are not confined to religious movements. They present formidable barriers both to pluralist tolerance within countries and to external influences.

Ongoing Role of International Collaboration

In the midst of such grave limitations, the cultural influences and international cooperation that are possible across the solidarities dividing the North and West from the rest of the world remain important. They may often be obscured in the turbulence of international crises, such as Saddam Hussein's invasion of Kuwait. The drama of international affairs will continue to focus on wars, revolutions, and economic crises, but crises provoke efforts at measures to avoid similar events in the future. The Western countries seem likely to continue to express some ambivalence over the development of other nations. Economic progress brings troubling competitors, and modern competences bring more alarming military threats. Still, refreshed faith in openness and democracy should encourage efforts to move Third World countries toward these goals. Some of these efforts must involve the jockeyings of international politics, but others must seek out slower measures aiming toward long-lasting cultural change. These longer-term measures must involve international flows of knowledge and educational and cultural relations. While investment flows and capital aid have tended to dominate discussion of the international conditions of development, the transfer of technology and the uses of technical assistance have always been recognized as important too. Now, at a time when industrialized countries are making nervous comparisons of educational quality and performance in a freshened sense of their importance for economic development, we may expect a similarly heightened attention to their importance in the development of Third World countries.

What can be done must depend particularly on the state of education and research in Third World countries, which will offer both opportunities and barriers and should engage our particular attention. In doing so, we must keep in mind that much more is at issue than policy. "Globalization" is a process much too protean and subtle for ready control by less than the draconian methods that have now been spectacularly abandoned by their prime exemplar with the advent of *glasnost*. Countries eager to spread the ideologies of openness and democracy have an undisciplined ally in globalization, much of which goes on without control by their own policies or those of the countries they seek to affect; at best they can exert some influence on it. And countries seeking planned educational development and the building of national cultures have taken on more than they can comfortably manage.

Education, Modern Knowledge, and National Cultures in the Third World

I have suggested special reasons for concern about education and modern knowledge in the Third World, but such concerns are, of course, nothing new. I have recalled President Truman's faith that modern knowledge would show the world the way out of suffering. Vast efforts have been made in the name of this faith, but with very mixed results that have set the conditions for new efforts.

The perception that command of modern knowledge is an essential condition of progress has been universal and has taken many forms. Both developing countries and aid programs have been much criticized for putting too much emphasis on industrialization. But they were certainly not mistaken in seeking the competences to diversify economies and adapt to changing international situations. Countries have had several reasons to want to build up their own educational and research institutions, but prominent among them was to provide the "manpower" and knowledge needed for development. They have done so with great vigor, seeking the means to be self-reliant and viable in a world where modern knowledge was accelerating change. The presumption that international openness was essential to economic progress was, for a long time, not accepted by the socialist countries. But they have also been aggressively industrializing countries, building their own technical and scientific competences to absorb (sometimes surreptitiously) what modern knowledge could offer.

Present anxieties over the state of education in the United States are reminders of the difficulties nations face when they seek to change and improve education and research capacity. Education may indeed be one of the most difficult fields for control by deliberate

policy. The reasons lie in two fundamental features of formal education: (1) the imperfect correlation between its service of individual and collective goals; and (2) the inseparability of its content and effective results from wider social and cultural conditions and significances.

The use of education as a means to both national and individual advancement has nearly everywhere produced an extraordinary demand for schools and universities and a correspondingly vast expansion of educational systems. The apparent indispensability of modern education has made its expansion a cardinal principle of developing countries' policy. Education has long won international support, with expansion being rationalized by "human capital" arguments and by the calculations of manpower planners. The right to education was enshrined as a moral imperative by the 1948 Universal Declaration of Human Rights. Illiteracy has been regarded as a disgrace, and universal education has been set as a goal to be reached as soon as possible. With education serving both development and basic human dignity, no legitimate basis for limiting educational expenditures has been readily voiced. Nations have been proud to tell how much they were spending; thus as poor a nation as Uganda was once pleased to proclaim that it was devoting a higher fraction of its development plans to education than any other nation.[26] Suggestion that too much was being spent on education has had to be left to external critics or to private worries.

Means have nevertheless been finite, and there has been a conflict impossible for poor countries to evade between development needs and educational opportunities for the greatest possible number. Equity issues have arisen to trouble both the countries themselves and international assistance programs. Calculations of manpower needs could, in principle, provide a rationale for distributing educational expenditures among levels and specialties. In this way, the higher expenditures on the favored few having access to advanced levels and expensive specialities could be justified; a cap on such expenditures from public funds could be set—in principle. But in fact it has only been possible to maintain such rationing of advanced levels of education in the rigors of the socialist planned economies.[27] The criticisms of overexpanded higher education that have long been familiar in the cost-benefit calculations of economists and troubled international donors have penetrated ministries of education. Thus, for example, Egyptian officials worried that in 1988 about one-third of public educational expenditures went to 689,000 university students, while the remaining two-thirds had to suffice for all the remaining 11 million in Egyptian schools and foreseeable population growth promised to make the proportions more disturbing. But governments have been sorely constrained in their capacity to react. Political leaders have found the demands of their citizenries for higher educational opportunities irresistible, and the common condition of overcrowded, ill-equipped, and frequently turbulent institutions of advanced education has resulted. We have had the melancholy spectacle of countries as poor as Sudan, Madagascar, Kenya, and Tanzania planning new universities when they lacked the means for adequate support for the ones they already had.

The result of this uncontrolled expansion of education has been a glut of diplomas over most of the world. Where once a primary education might lead to a job, one found unemployed "school-leavers," then unemployed secondary school graduates, then finally university graduates with no jobs, at least for longish periods after their graduation. The progression is not confined to the poor countries. In the United States, we now view with some alarm college graduates being hired for jobs once filled by high school graduates, who now are only left menial jobs or unemployment. A general social process has been underway, more troublesomely in some countries than in others.

Foreign donors have been perturbed by this process, though less at the lower than at the higher levels of education. The fact that there is, in general, no quantitative dearth of university graduates in most countries of the world has been a particular discouragement to favored forms of international assistance. The numbers with advanced education in the poorer countries may appear small by international comparison, but the countries' small economies typically do not require many highly educated individuals. In many places, the excesses are formidable, even in the sciences and engineering. The Israelis are currently worried about their absorption of thousands of engineers coming from the Soviet Union. They dream of regional projects that would benefit the Middle East at large, but as Professor A. B. Zahlan pointed out a decade ago, the Arab countries even then had ten times as many

graduate engineers as Britain had.[28] The old presumption that there were too many university graduates who had studied law or liberal arts and that correction would come from the pursuit of more useful studies has proven hollow; distress over unemployed graduates of the agricultural universities in India, heavily supported by U.S. foreign aid, appeared at least two decades ago; it was long ago apparent that African universities would soon turn out more agriculture graduates than governments could afford to employ.

There is no early, or even distant, prospect of changing this situation and bringing individual rights and ambitions into better concordance with national needs. The educational dilemma is a pervasive and fundamental problem, not confined to the developing countries, as we know in the United States. Small wonder that international development assistance, public and private, was discouraged over education in the 1970s after preoccupation with it during the previous decade.[29] Any revival of concern with education must find new and promising paths through a jungle of obstacles.

Growing Concern About Quality

Development strategists have long complained that politicians were completely absorbed in quantitative expansion, and there is now growing recognition that the *quality* of higher education in many countries is poor. Development ideology envisaged the growth of national institutions that would be adapted to national conditions and that would train graduates suited to national needs. These national institutions would, moreover, provide loci for research and the growth of authentic, self-confident national cultures. Pragmatic concerns have been reinforced by national pride in seeking institutions of distinction and quality, goals that have been hard to achieve. In many ways, too much has been expected of universities; they could not assure that trained "manpower" for development would be well-used, and there have been exaggerated demands that they directly serve development. But there remain legitimate dissatisfactions. The very feeble showing of the developing countries in scientific research thus far confirms that their ambitions to be founts of new knowledge, at least for their own needs, have yet to be realized.[30] The extent to which the universities of developing countries have been guardians and creative developers of national cultures is not easy to assess in general terms, but their strong conservatism in curricula and syllabi, the limited resources they offer for research and scholarship, and their frequently repressive environments have been formidable constraints.

One evident course toward better quality has been to seek differentiation—to establish and maintain more selective and better-endowed institutions. Strongly egalitarian values and the heritage of colonial systems with uniform degree standards have obstructed such differentiation, but it has nevertheless been achieved to varying degrees. One thinks of such examples as the Indian Institutes of Technology, the Indian Institutes of Management, or El Colegio de Mexico. Leading national universities like the University of the Philippines or Delhi University in India have sometimes been able to keep standards well above those prevalent in their countries. Institutions focusing exclusively on graduate study and research have been set up, such as Quaid-i-Azam University in Islamabad.

Another way of reconciling demand with resources has been through privatization. Where there has been tolerance for private higher education, institutions such as the Asian Institute of Management in Manila, the Aga Khan University in Karachi, or the Monterey Institute of Technology and Instituto Technologico Autonomo de Mexico have been established. In some places—the Philippines, Indonesia, and several countries in Latin America are examples—there has long been extensive private higher education, often of uncertain or inferior quality, that is a response to pressing demand and the limited opportunities provided by public institutions. As in the United States and Japan, this proliferation of private education has been possible where there was no effort to hold university degrees to a uniform standard and where it was not expected that higher education be essentially free. As mentioned above, the European colonial heritage in many countries favored uniform standards and free public higher education, and suspicions of elitism have reinforced the normal educational conservatism. Nevertheless, in recent years, there has been a new surge of interest in private higher education, sometimes in pursuit of distinctive quality, sometimes simply to ease the pressures on public institutions.

Both these moves, toward institutions of special quality and toward privatization, present opportunities for international cooperation. Institutions aspiring to a special level of quality cannot be isolated; they must keep abreast of what is going on elsewhere. Private

institutions may be narrowly parochial, but they represent ambitions that are not strictly national and they frequently have international connections, religious or otherwise.

International Migration of Students

There is another, massive consequence of the dilemmas of reconciling individual aspiration and national needs: the international migrations of students. In broad terms, the facts of student migration are familiar. Governments that were rich enough at various times to do so—Saudi Arabia, Nigeria, Malaysia, Iran—have funded large numbers of students in foreign universities. There have been continuing exchange programs, like the Fulbright program, funded by developed countries. The rationales of these programs have been various. There has been a compelling case for graduate study abroad, particularly for small countries, because of its costliness, specialization, and the need to keep up with rapidly moving frontiers of research. But, as the annual reports of the Institute of International Education tell us, the main student flows in the United States have not resulted from publicly supported programs, but have been privately funded. The flows have consisted of students whose family means permitted them to seek more prestigious and better education abroad than they could get at home, either in the hope of more permanent migration or better opportunities at home. Foreign student flows are in this sense a consequence of private ambition and the inadequacies of national institutions. Like other aspects of globalization, they are a difficult but obviously important subject for policy.

The vision of Point IV, that existing modern knowledge could be diffused to lift all the world from poverty, has yielded with experience to the recognition that new knowledge and research are essential complements. Both knowledge transfers and the pursuit of new knowledge require the linking of national and international resources. Universities are natural foci for the promotion of research, but their overburdening with other demands has limited what they could do. The recourse to institutions other than universities for the advancement of research has a long history, antedating independence in the excolonial countries. Government services in such fields as agricultural and medical research have been common, and other research institutions, both autonomous and government-sponsored, have been widely developed. Foreign assistance has frequently sought to develop research in such institutions rather than in universities. International agencies have also promoted international institutions, most familiarly in the panoply of agricultural research institutes under the Consultative Group on International Agricultural Research. Assessing the merits and costs of this separation of research from higher education is not simple. The current travail of national research services during the economic deterioration in Africa or the collapse of Pakistan's research services in the early 1970s are reminders that other institutions may be quite as vulnerable as universities. The essential point is that productive research needs institutional settings that are not easy to maintain in developing countries and are often not found in universities. The familiar and melancholy spectacle of well-trained researchers failing to find productive careers after they return home seems to be not for want of talent but for want of places where they can stay active and current in their fields. The maintenance of such active institutions seems to require international linkages. Wherever they are found, these institutions must avoid isolation if they are to keep up with the accelerating pace of new knowledge around the world and respond to the stimulation of its competition.

It has been relatively easy to promote international cooperation for research in subjects like the sciences and technologies, which were, or appeared to be, culturally neutral. But modern knowledge embraces a great deal that is not culturally neutral, and it inevitably impinges on the efforts of nations to build their national cultures. Universities are natural repositories of national cultures, though with the weaknesses I have already suggested, and they are enveloped in swirling activity in other quarters. That India is the third largest publisher of books in English, after Britain and the United States, and has a growing literature in at least 16 other languages[3] reminds us how abundant and complex cultural life in a Third World country may be. The rest of the Third World may trail behind India in richness and variety of sophisticated cultural activity; in many places there are severe constraints on such activity from poverty and repression. But there are common patterns of change, rooted in the dilemmas of adjusting to the invading cosmopolitan culture and continuing to "develop," while clinging to what peoples

feel is distinctively theirs.[32] At a time when the Western countries are themselves struggling to be pluralist democracies and are promoting them elsewhere, patterns of cultural change are of particular interest.

Universities and Cultural Conflict

Universities are inevitably cockpits of cultural conflict. There may be exceptions, particularly the Islamic universities, but most are grounded in the secular culture of the modern West. As such, they have a commitment to intellectual values that are in poor accord with much of their surrounding culture. The clashes that are familiar in the West between liberal detachment and demands for commitment to particular beliefs and causes are typically acute. Student activism brings these clashes into the bosoms of the universities and is a great source of their turbulence. Universities have both formal and informal responsibilities to their cultural settings. They must study national history and culture with all the hazards that such study entails. If they are faithful to the canons of objective scholarship, they may suffer the wrath of the political authorities—as dissidents in Eastern Europe did—or of their own passionate students. The temptations to a *trahison des clercs* must be strong, not simply out of prudence but from national or cultural loyalties. We may sympathize, for example, with professors at the University of Islamabad in its section on Pakistan studies and at provincial universities where they are pressed for instruction and examination in Punjabi and Sindhi, despite the very sparse written literatures in these languages. They have at the same time the responsibilities of helping build Pakistani culture and maintaining the intellectual standards that make them proper professors.

The challenge of building confident and coherent national cultures has certainly not been diminished by the troubles that have afflicted Third World countries in recent decades. These troubles have nourished ethnic, tribal, and religious movements, as I have noted earlier, and have heightened pressures to preserve national unity and political stability. Despite the discrediting of Soviet efforts to suppress national cultural variety and independent thought, constraints on public discourse and scholarship have grown in many places and have brought the hazards of dogmatic rigidities to national cultures. There has undoubtedly been exaggeration of what universities and scholars can do for cultural development, but without their healthy participation it will be difficult to progress toward results in keeping with the demands of living securely in a globalized world. Academic teachers and scholars may be gravely constrained by limited resources and restricted public discourse, but they are inevitably important interpreters for their societies. The very fact that they typically need more than academic incomes to sustain themselves spreads their influence, and, having often had some part of their education abroad, they are natural mediators between imported and indigenous cultures. They need the support of international cooperation and are a natural focus for it.

In sum, then, these broad changes of recent decades have embraced: (1) a worldwide expansion of education that has outrun planning and policy, has strained the resources of nations and of educational institutions, and has affected the quality of education; (2) efforts toward better quality, against serious resistances, in differentiation and privatization; (3) large and continuing international migrations of students stimulated by the deficiencies of universities and limited opportunities in the developing countries; (4) setbacks in original research and assimilation of modern knowledge caused by the overburdening of universities and other institutional weaknesses in the developing countries; and (5) as-yet-unfulfilled hopes that universities would become beacons of cultural development. These are the trends and conditions within which policy on international linkages in education, research, and scholarship must be shaped. They are, for the most part, not new, and have been appearing over many years, but they show new points of interest in the changed world of the 1990s.

Prospects for International Cooperation in the 1990s

The emerging pattern of international relations described in this paper preserves something of the dissolving tripartite world amid much that is new and fluid. Underlying conditions remain much as they have been: Immense differences in the wealth of nations persist, globalization and interdependence grow, and security concerns retain their perennial force. The collapse of Communism in Eastern Europe and the Soviet Union has given renewed strength to a Western

and Northern vision of the world made prosperous and secure by the spread of market economies and democracy, resting ultimately on openness and growing cultural uniformity. The rest of the world is less ready to abandon the old distinctions that made the Third World a category of developing countries. Nationalism and jealous defense of sovereignty persist, but within a sense of common condition and resistance to Northern and Western domination. Oppositions and conflicts will continue to divide the North and South but within continuing needs for cooperative efforts—military, economic, and otherwise. I have suggested that both new ideological emphases and objective needs give a heightened place to matters that are in a broad sense cultural. We have seen, at various points, potential for international cooperation in these cultural matters. In this concluding section we must explore what the forms of such cooperation may be.

There has been much worried discussion in the Third World, and among those who have cared about it, over the diversion of interest and resources that the construction of a new Europe will bring; this worry is reinforced by expectations that the easing of East-West competition will bring indifference toward much of the Third World. These are surely not misplaced concerns. Both Western European countries and the United States are now deeply engaged in the economic and other problems arising from the transformation of Eastern Europe and the Soviet Union. Insofar as Third World engagements have been driven by great power competition, they bid fair to be reduced. A more particularized attention to countries and regions that arouse security concerns, as the Middle East now does, will be the likely pattern of engagement. We have seen a rising awareness of common culture and concerns over near neighbors that strengthen regional over more universal interests, but the global interdependence is now so multiform and important that narrow confinement to regional interests is most unlikely.

Two broad categories of international cultural activities may be distinguished: (1) those that involve primarily international movements of people, information, and cultural productions of many kinds; (2) those that primarily involve institutions and cultural activities within countries. Exchanges, one-way movements, and linkages of institutions are examples of the former; the latter include internationalization of curricula, development assistance programs, religious missions, and much else. Both categories involve education, science, and other forms of culture. As I have repeatedly stressed, much goes on that escapes the control of policy, but in some form or other national policies in these matters are ubiquitous.

There was, in more idealistic periods in this country, a faith that mutual knowledge of nations would bring mutual sympathies and a peaceful world. Exchanges have been promoted in this faith, privately and publicly, and most famously in the Fulbright program. Foreign aid programs have brought many more visitors, with the aim of spreading modern, useful knowledge rather than mutual understanding as such. There is also a vast array of international meetings across the spectrum of knowledge from the sciences to the humanities, some of them one-time occurences, but many in continuing organizations and institutional linkages. These various forms and purposes of international cultural relations are complicated enough, but we must also remember that the deliberately promoted flows of students, scholars, and other seekers of enlightment are small in comparison with those who make their own way. These flows are hardly easier to control than the migrations of the humble poor. In the abundant international educational traffic into this country, there are many students who try to stay, and there is a large immigration of professionals who have been trained at home—the 6,000 Indian engineers in Silicon Valley being one conspicuous cluster.

The United States is, of course, not alone in facing this bewildering variety of international cultural flows. It has sometimes been deplored that the United States has no coherent international cultural policy, but the aspiration to one may be Utopian or even inconsistent with its character as a liberal, pluralist democracy. At best, policy grows piecemeal in response to salient concerns of the times. The United States and other countries now face the set of conditions that have been the subject of this paper, to which they must respond. The relevant conditions, in summary, are:

- the essentially international character of modern scientific, technical, and other forms of "useful" knowledge, upon which economic progress depends;
- the heightened concern with democracy and open-

ness as conditions of security and world peace;

- a renewed concern with mutual knowledge and understanding among different cultures, stimulated both by the situation within pluralist democracies and by desires to spread the conditions for effective democracy.

A More Complex Set of Relationships

Nations eager for access to useful knowledge will certainly bring undiminished efforts to this goal, but with some discernible changes of pattern. The ending of the Cold War has brought the remarkable spectacle of the United States offering technical assistance to the Soviet Union—even in banking after the savings and loan disasters at home. Such programs remind us of the diversity of interests that surround international flows of useful knowledge. The old division between developing countries that need assistance and developed ones that do not dissolves into a more complex set of relationships. Matters of international competitiveness and security make access to scientific and technical knowledge subjects of much more than development policy. The diversity of the world that has complicated the World Bank's and others' classifications of countries requires complex policy changes that are not easy to achieve. In the Carter administration, the aborted effort to establish an institute for scientific and technical cooperation arose in part from recognition of needs that went beyond the established boundaries of foreign aid programs. Reluctance to continue the decades of development debates suggests a grudging response to the needs of many countries, but development assistance programs, including what the United States has called "specialist training" programs and other forms of technical assistance, will surely continue. The emphasis in the foregoing analysis, on how security, proximity, and political and cultural criteria have produced very uneven patterns in the distribution of development assistance, points toward more variety and particularization in future programs. It strongly suggests that the sharing of useful knowledge will be more closely enmeshed in political and cultural matters than it has been in the past.

I have stressed the generality and cultural neutrality of older conceptions of development. There has been great resistance to politicizing development assistance among its practitioners and recipients and a reluctance to give cultural differences a central role. The importance of cultural factors has nonetheless been evident, and the focus of interest on the stability, peaceful behavior, and progress of particular countries brings a heightened interest in their distinctive characteristics. The interest of the United States in Mexico or Middle Eastern countries, like the interest of Europe in its Mediterranean neighbors, cannot be left abstractly in general principles of political and economic development. It must be infused with consideration of the cultures of these countries and the particulars of their international relations. There has, in the past, been a wide separation between development experts and area study specialists. They will need to work more closely together in the future.

A New Ideology of Democracy and Openness

The thrust of the new ideology of democracy and openness is to enmesh development in political and cultural change. "Conditionalities" of democratic behavior and respect for human rights are used to ban and bless. When the urgency of interest leads to active assistance programs, there is a search for legitimate ways to foster the desired changes. Many of these, as I have suggested, lie in education and research and in the institutions that are devoted to them. The grave problems that now afflict Third World educational systems, and universities in particular, make them difficult subjects of effort. But the indispensability of effective higher education and research to the progress of modern nations makes them a necessary focus of attention. I have suggested the roles that universities, research institutions, and their staffs should play, not only in the production and dissemination of knowledge, but also in the maintenance of the essentials of liberal societies and the building of national cultures. They are critical links to the wider world. There are many institutions that present forbidding difficulties, and in some of the smaller and poorer countries, there is little that is promising. But I have noted the efforts in several countries to foster institutions of special quality, including some private institutions that offer opportunities for productive effort. Past assistance to university and research development has been strongly applied and technical. There will certainly be reasons to continue in this vein, in such familiar fields as agriculture and tropical health, but a more general interest in the full range of scholarship and research beckons for attention, given the widened current interests in fostering national cultures and their change. The Western

countries now have panoplies of specialists in foreign areas who are not simply servants of their nations' interests, but natural collaborators of scholars in the areas they study. There is an evident need for means to enable these scholars to work and teach together for the purposes we and others now proclaim.

Concern about the state of educational and other institutions within Third World countries is likely to be uneven, in keeping with security and other interests that shape foreign policies. Exchange and other international travel and meeting programs can be more general and indeed tend to be so. Whatever the course of policy, there will continue to be large private flows of knowledge and people. The attractions of the rich, industrialized countries and the weaknesses of opportunity and educational quality at home will continue to bring students and migrant professionals in greater numbers than deliberate programs do. Policy must reckon with what it can add to or facilitate in an ill-controlled process, and it will be affected by current interests in particular areas, as we now see in Eastern Europe. However, there now seems to be a more lively interest in promoting exchanges that accords with an enlivened sense of being pluralist democracies fatefully engaged in the wide world. Current legislation in the U.S. Senate that would add some $200 million by 1994 to the United States Information Agency's exchange programs is a sign of this interest. This agrees with the new ideological emphasis on democracy and openness in its idealistic concern about what exchanges can do for the mutual understanding of nations. The faith that democracy sets domestic barriers to war-making has its complement in the faith that linkages of peoples across their national boundaries will also create barriers to war. A revival of the idealism that led, in an earlier time, to the establishment of the Fulbright and other programs may be a fragile thing, but it accords with deeply felt concern for the maintenance of tolerant pluralism in our interdependent world. The United States and other countries striving to be pluralist democracies face domestic tensions that remind them constantly of a great diversity of opinion and conviction. Western countries share with the others a common problem in taming intransigence and tolerating difference. The habit of respecting difference among nations and cultures within a frame of common, liberal values is basically the same exercise that we and others must put into practice at home. The elevation of such pluralistic tolerance to international principle should give strength to democracy everywhere.

Early this year, speaking informally at Sverdlovsk, Mikhail Gorbachev said, "If we do not get out of the system we're in—excuse my rough talk—then everything living in our society will die . . . we will asphyxiate."[33] The drama of the effort to escape from the old Soviet system goes on, but it has already made breathing easier in much of the world. We continue to live in a very dangerous world, but the 1990s have begun with our hopes for safety placed in something better than mutually assured destruction. It has even been possible to end this paper on a note of optimism, while remembering that, if our hope is to be justified, efforts no easier than those before Gorbachev and the Russians lie before us.

Author's Note

This paper, written in the summer of 1990, is freely peppered with references to events of that year and the preceding year, 1989, which I called an *annus mirabilis*. I was attempting to evoke a clear vision of the state of the world as we crossed the threshold into a new decade that we wanted to forsee as best we might. The months between the summer of 1990 and the end of 1992 have been so rich in historic events and portents that it might seem lazy, stubborn, or inattentive to think they have not sharply altered what can be seen ahead for the rest of the decade. To recall only a couple of dramatic peaks, the dissolution of the Soviet Union and the attempt to reverse it by coup in August 1991 has intervened, as has the Gulf War. But I do not think these great events, or indeed any lesser ones in this interval, require a long coda of revisions and reconciliations here.

One can see many ways where the analysis could have been better and the vision sharper; sometimes this is because subsequent events lead to a shift of emphasis or a qualification. For example, the breakdowns of order in the Third World and ex-communist countries—in places as diverse and scattered as Liberia, Sudan, Somalia, Bosnia, Nagorno-Karabagh, and Tajikistan—have been more frequent and more unsettling to international relations than this paper antici-

pated. They have an ominous generality that beckons for a deeper analysis of causes and responses than was given. The paper did predict a continuation of the charitable concerns that have motivated disaster relief and development programs in the past, but it hardly foresaw the organization of military expeditions to save remote peoples from the consequences of anarchy and civil war.

I alluded in the text to the geologist's science of plate tectonics and the uncertainty of earthquake prediction. Because the paper's argument stays at the level of general processes (like plate tectonics), it should not be vulnerable to quick deflation by concrete events, even remarkable ones. And since it is not a policy paper, it is perhaps less in need of sensitive adjustment to the conjunctures of the immediate present than policy needs to be. But the reader must, of course, be the judge of these claims.

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Notes

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9. Reynolds, L. G. 1985. *Economic Growth in the Third World, 1850-1980.* New Haven and London: Yale University Press.
10. Summing up the European advance in the thirty years after World War II, a retiring editor (Andrew Knight) of the *Economist* found it in a "simple mix: taking up the slack created by the war, and adding a stride forward in already familiar mass-production technologies" (February 7, 1987, p. 15).
11. An old Pakistan hand reported on these movements with awe: "There must be nothing like this movement of two million souls cycling out of a society since the Western migrations to the New World or the depopulation of the European countryside and the breaking of feudal tenures caused by the Black Plague" (R. E. Edwards, in an informal Ford Foundation memo, 1980.)
12. For a vivid account, see "Courage, fuyons" in *Le Nouvel Observateur*, July 1990, pp. 40-41.
13. *The New York Times.* July 30, 1990, p. A6.
14. Fuchs, L. H. 1983. Immigration, pluralism, and public policy: The challenge of pluribus to the unum. In: Kritz, M. M. (Ed.), *U.S. Immigration and Refugee Policy* (pp. 289-316). Lexington, MA: Lexington Books.
15. For an illuminating analysis, see: S. J. D. Green, "Beyond *The Satanic Verses*/Conservative religion and the liberal society," in *Encounter*, June 1990, pp. 12-20.
16. *American Scholar*, Summer 1990.
17. Aho, C. M.. 1990. *U.S. Trade Policy at a Critical Juncture.* Pamphlet from the Council on Foreign Relations.
18. See Brauer, D. July-August, 1990. Tying aid to democracy. *UN Development Forum* (p. 3).
19. The Trade Policy Research Centre in London has so argued. I have used two 1986 papers from this Centre: Wolf, M., *Aid in Everything?* and Hudek, R. E., *The Participation of Developing Countries in the GATT Legal System.* They may have since been published.
20. *UN Development Forum.* May-June, 1990, pp. 1, 17.
21. *The New York Times.* July 3, 1990, p. A3.

22. There is already a considerable literature, and Prof. Bruce Russett has a book in preparation entitled *Democracies Don't Fight Each Other? If Not, Why Not?*

23. See Kober, M. Summer 1990. "Idealpolitik" in *Foreign Policy*, 79:2-24.

24. See note 20. The words, interestingly enough, are those of the Mexican representative.

25. From the political declaration of the Sixth Conference at Havana, 1979. In: Jankowitsch, O. and Sauvant, K. (Eds.), *The Third World Without Superpowers: The Collected Documents of the Non-aligned Countries* (a series of papers published from 1978 to 1986). Dobbs Ferry, NY: Oceana Publications.

26. In the 1963 Development Plan.

27. When the International Association of Universities met in Moscow in the 1970s, the heads of universities from Western Europe and the United States were struggling with the flood of new admissions that decade brought. The "socialist" rectors offered to instruct them in the practice of effective manpower planning.

28. Zahlan, A. B. 1980. *Science and Science Policy in the Arab World.* New York: St. Martin's Press.

29. The record is reviewed in my article "International Cooperation and Assistance" in the *International Encyclopedia of Education.* London: Pergamon Press, 1983.

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31. See Wright, C. April, 1990. "Ah, Calcutta!" in *Encounter*, pp. 39-42.

32. Clifford Geertz once called this the contention between "epocalism" and essentialism." Cf. After the revolution: The fate of nationalism in the new states, in: Barber, B., and Inkeles, A. (Eds.), *Stability and Social Change.* 1971. Boston: Little Brown.

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Chapter 2

Global Trends in Overseas Study

William K. Cummings

Global improvements in communications and transportation, the mounting reliance on modern technology and technical skills, and the increasing economic interdependence of nations are among the universal forces behind the expansion of overseas study. United Nations Educational, Scientific and Cultural Organization (UNESCO) statistics reported 107,589 overseas students in 1950 and 1,127,387 in 1987. The current global total may easily exceed one million.

While overseas students currently constitute less than 2 percent of the global total of higher education enrollments, in several European countries their numbers exceed 10 percent of total enrollments. In the United States overall, overseas students constitute less than 3 percent of total higher education enrollments. But in certain states they exceed 10 percent and in certain institutions they exceed one-third of the student body. The rapid increase in the numbers of overseas students during the 1970s stimulated concern in several of the advanced societies about the long-term implications of expansion in overseas study both for host and sender countries.[1] One outcome of this concern has been the effort to understand better the trends in overseas study.

What, for example, is the relationship between overseas education and domestic development? A careful inquiry may lead to more questions than answers. Overseas education seems as much a consequence of development as a cause. And it would appear that host countries reap at least as many benefits—in terms of spending on living costs, tuition revenues, and talented immigrants, including an influx of capable students and labor for research/teaching assistantships and postdoctoral positions—as do the sending countries who recover only a fraction of the students who leave.

Apart from development, there are other paradigms with which to analyze overseas education, including individual advancement, regional solidarity, and the emergence of a new international economic order. These paradigms lead to different images of the purposes and causes of overseas study.[2] Rather than tie an analysis of overseas education to any one of these paradigms, it seems useful first to focus on what is known about the phenomenon.

Let's look at several of the global trends in overseas study, influences on the outflow of students from particular countries, influences on the volume of flow to particular host countries, and some guesses about future trends.

Insofar as possible, comprehensive data obtained from all the countries that receive overseas students have been used. However, since statistical data for many

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countries are only available through the mid-1980s, information from the United States and the leading advanced societies may be drawn on to illustrate the most recent global trends. This seems justified as over one-third of overseas students are in the United States, and an additional one-third are in the United Kingdom, France, and the Federal Republic of Germany. UNESCO, which is the principal source of global statistics, tends in its tables to pool data reported by host countries for different years; steps are introduced here to improve on that practice.[3]

Global Trends

The rate of global expansion in overseas study is sensitive to changes in the world economy. This is best illustrated by the U.S. data, which extends through 1990 (Figure 1). The rate of expansion was most rapid during the latter half of the 1960s and the latter half of the 1970s, two periods of relative health in the world economy. On the other hand, expansion slowed significantly in the early 1970s, accompanying the post-Vietnam War recession, and in the early 1980s, a time when the economic growth of most of the advanced economies slowed.

Until the early 1980s there was a steady increase in the numbers of students from all regions, as indicated in Table 1. Africa's numerical increase was most rapid, and thus its share nearly doubled between 1963 and 1978. However, as with all the regional generalizations we will be reporting, there is much variation among African countries. Nigeria's expansion was, during this period, three times the overall African rate, while there was an absolute decline in the numbers from several other African nations. The share from the Middle East rapidly expanded during the 1970s, but since then has lost ground.

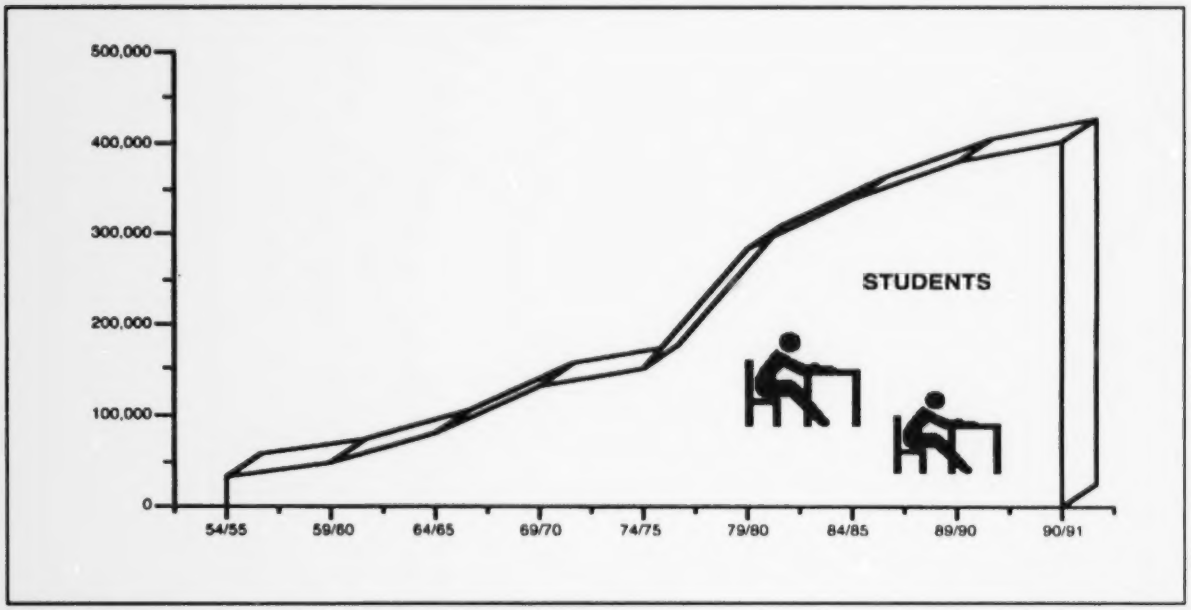
Since the early 1980s, the absolute numbers from the Middle East and South America have decreased. While the figures are not available for all host countries, the United States reports a 60 percent decline from 1980/81 to 1990/91 in the number of overseas students from the Middle East, and more modest declines for Africa and Latin America (see Figure 2).

By region, Asia currently supplies the largest proportion of overseas students. Among the Asian subregions, Southern Asia's rate of growth peaked in the 1960s. Currently, the supply from Southeast Asia appears to be slowing down while that from Eastern Asia continues to increase at a modest rate. Among the ten countries supplying the most overseas students, over one-third have consistently been in Asia. As illustrated in Table 2, Middle Eastern countries such as Jordan and Iran were the largest suppliers through

Table 1
Region of Origin of Overseas Students, 1963–1985

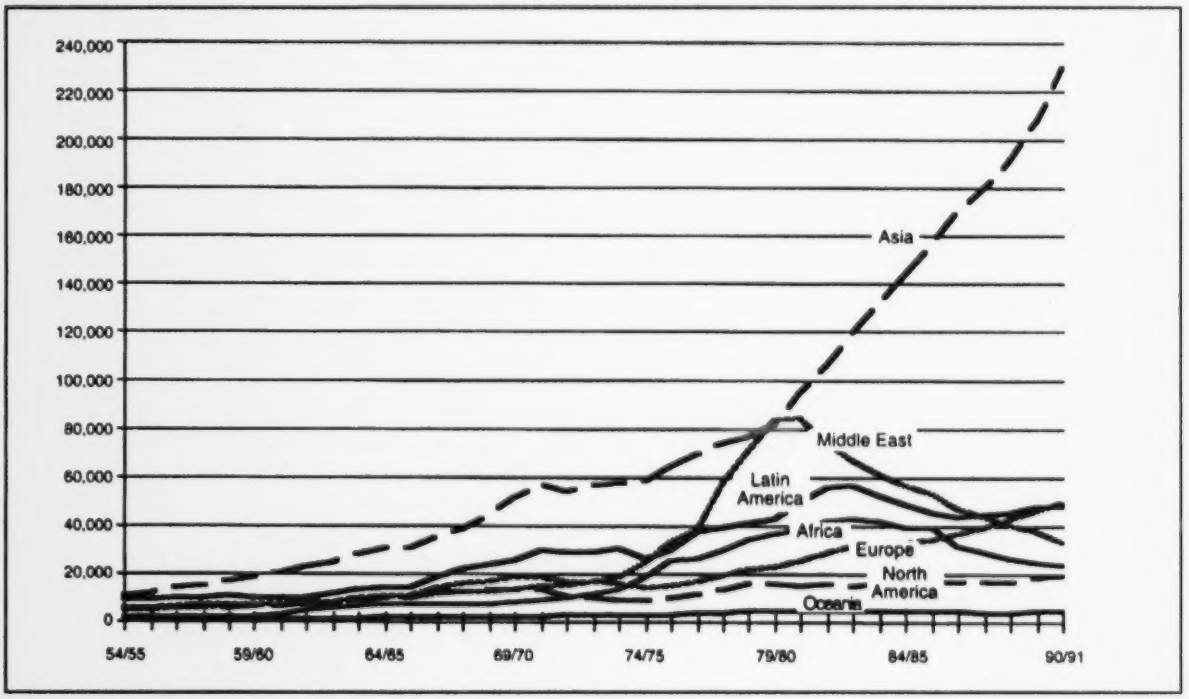
Region of Origin	1963		1968		1973		1978		1985	
	Number	%	Number	%	Number	%	Number	%	Number	%
Africa	35,587	12.2	48,067	11.8	90,390	15.3	159,662	19.3	165,777	18.7
North America	39,515	13.6	58,999	14.5	77,210	13.0	79,652	9.6	69,792	7.9
South America	21,334	7.3	25,194	6.2	26,855	4.5	44,457	5.4	35,563	4.0
Asia	122,856	42.3	182,445	44.8	260,713	44.0	371,711	44.9	428,764	48.5
Europe USSR	68,443	23.6	87,919	21.6	130,759	22.0	163,569	19.8	177,089	20.0
Oceania	2,880	1.0	4,362	1.1	7,393	1.2	8,001	1.0	7,910	.9
Total of Known Origin	**290,615**	**100.0**	**406,986**	**100.0**	**593,320**	**100.0**	**827,052**	**100.0**	**883,895**	**100.0**
Origin not Specified	8,919		21,879		44,210		15,653		54,909	
Grand Total	**299,534**		**428,865**		**637,530**		**842,705**		**938,804**	

Figure 1
Foreign Student Enrollment in the United States, 1954/55–1990/91



Source: *Open Doors 1990/91,* Institute of International Education

Figure 2
Foreign Students in the United States by World Region of Origin, 1954/55–1990/91



Source: *Open Doors 1990/91,* Institute of International Education

Table 2
The Twenty Countries Supplying the Largest Numbers of Overseas Students in 1965, 1975, 1985, and 1989

1965		1975		1985		1989	
Jordan	17,235	Iran	33,021	China	42,481	China	80,179
USA	16,248	USA	29,414	Iran	41,043	Morocco	34,430
Taiwan	16,061	Greece	23,363	Malaysia	40,493	Japan	32,609
Canada	11,353	Hong Kong	21,059	Greece	34,086	Iran	32,140
India	11,192	China	17,201	Morocco	33,094	Greece	31,080
Iran	10,498	U.K.	16,866	Jordan	24,285	W. Germany	30,728
W. Germany	9,970	Nigeria	16,348	Hong Kong	23,657	S. Korea	30,601
Greece	8,933	Malaysia	16,162	S. Korea	22,468	Malaysia	29,528
France	7,908	India	14,805	W. Germany	22,424	India	29,498
Syria	7,837	Canada	12,664	USA	19,707	Italy	23,198
Peru	7,830	S. Vietnam	12,171	Nigeria	19,673	Jordan	22,651
Malaysia	7,595	Jordan	11,601	Italy	17,935	USA	22,356
U.K.	7,279	Italy	11,251	India	17,824	Hong Kong	20,699
S. Korea	7,014	W. Germany	10,759	Syria	16,693	Turkey	19,794
Hong Kong	5,814	Cyprus	10,725	Canada	16,254	Canada	19,734
Italy	5,619	Japan	10,506	Turkey	16,168	France	18,692
Iraq	4,241	Turkey	9,541	Japan	15,335	Algeria	16,592
Thailand	4,130	Morocco	9,344	Lebanon	14,661	U.K.	15,951
Japan	4,085	Thailand	9,052	U.K.	14,513	Palestine	13,703
Nigeria	4,059	France	9,010	Algeria	13,861	Yemen	13,405

much of the 1970s, but by 1985 several Asian countries were among the largest suppliers in absolute terms.

Even when the population size of the Middle Eastern countries is taken into account, their propensity to supply students remains impressive. As illustrated in Table 3, in 1985, three of the ten countries in the world with the highest ratio of students exported to total population were in the Middle East.

The major direction of overseas student flow is from developing to developed countries. Indeed, in 1980, as indicated in Table 4, over two-thirds of all overseas students were in only five advanced societies.

Several developing countries are also hosts to large numbers of overseas students. Table 4 indicates for 1985 that Lebanon and Saudi Arabia were among the world's top ten receivers of overseas students; to this list could be added the Syrian Arab Republic, which was fourteenth with 12,909 students, and Egypt, which was fifteenth with 12,235. Brazil, India, and the Philippines also receive large numbers. It is likely that the numbers in most of these developing countries will continue to increase.

Among advanced societies, as indicated in Table 4, the United States' share of overseas students has steadily increased. Currently, it receives over one-third of all overseas students. In recent years, France has retained its share, while the United Kingdom and Germany are slipping. In the case of the United Kingdom, since 1978 there has been a sharp decline, not only in the

proportional share of the global total but also in the absolute number of overseas students. Japan, as indicated in Table 5, is still far behind other advanced societies in hosting overseas students, but the numbers are increasing rapidly. Reliable figures were not always available for the former Soviet Union.

In the past, overseas education tended to involve a long trip—from a developing country to a former colonizer or a cold-war ally, for example. In recent years, it appears that an increasing proportion of overseas study is short distance: 76 percent of overseas students from Europe in 1985 ended up in another European country compared with 65 percent in 1965. A similar pattern of endogamy can be found in the Middle East. Even in Africa, there is increasing flow to the relatively large higher educational systems of Nigeria and Zimbabwe concurrent with a levelling off of the flow out of the continent. This trend towards the regionalization of overseas study has been encouraged by the new pattern of regional political and trade alliances such as the European Economic Community (EEC), the Association of Southeast Asian Nations (ASEAN), and the prospective North American free trade zone.

Table 3
The Twenty Countries with the Highest Ratios of Students Overseas to 10,000 Population in 1965, 1975, and 1985

1965		1975		1985	
Jordan	87.8	Cyprus	176.1	Cyprus	147.2
Cyprus	45.9	Bermuda	87.5	Bermuda	144.1
Iceland	22.3	Luxembourg	66.0	Luxembourg	98.2
Mongolia	21.9	Bahamas	58.8	Jordan	69.3
Kuwait	20.4	Bahrain	52.5	Bahamas	67.0
Trinidad	16.2	Hong Kong	48.3	Iceland	62.8
Hong Kong	15.7	Jordan	44.6	Lebanon	55.0
Lebanon	15.2	Trinidad	31.3	Bahrain	44.4
Syria	14.7	Iceland	30.4	Hong Kong	43.4
Bahrain	13.3	Guyana	27.7	Brunei	39.3
Barbados	10.9	Lebanon	26.5	Mauritius	36.5
Panama	10.6	Greece	25.8	Greece	34.4
Greece	10.4	Barbados	24.1	Qatar	34.1
Israel	10.1	Antiqua	22.4	Tonga	27.6
Jamaica	9.4	Brunei	19.1	Trinidad	27.3
Malaysia	8.0	Belize	17.8	Grenada	27.2
Singpore	7.7	Mauritius	16.9	Singapore	26.1
Bolivia	7.3	Israel	16.6	Malaysia	25.8
Mauritius	7.1	Gabon	15.6	Kuwait	25.6
Tunisia	7.1	Kuwait	15.4	Sao Tome	21.1

Table 4
The Ten Countries Receiving the Largest Numbers of Overseas Students in 1968, 1980, and 1985

1968			1980			1985		
Country	Number	% of Total Overseas Students	Country	Number	% of Total Overseas Students	Country	Number	% of Total Overseas Students
USA	121,362	28.3	USA	311,882	33.8	USA	349,620	37.2
France	36,500	8.5	France	110,763	12.0	France	126,762	13.5
W. Germany	26,783	6.2	USSR	62,942	6.8	W. Germany	79,354	8.5
Lebanon	18,811	4.4	W. Germany	61,841	6.7	U.K.	48,686	5.2
Canada	17,414	4.1	U. K.	56,003	6.1	Italy	28,068	3.0
U. K.	16,154	3.8	Lebanon	31,018	3.4	Canada	27,210	2.9
USSR	16,100	3.8	Canada	28,443	3.1	Lebanon	25,515	2.7
Egypt*	14,008	3.3	Italy	27,784	3.0	Belgium	20,095	2.1
Argentina	7,103	1.7	Egypt	21,751	2.4	Saudi Arabia	17,970	1.9
Italy	7,103	1.7	Romania	15,888	1.8	Australia	16,075	1.7

*An estimated 2,000 was subtracted for those attending Syrian Institutions of the United Arab Republic.
Source: UNESCO, *Statistical Yearbook*

The great majority of overseas students are self-supporting. While comprehensive data are not available, it would appear that host governments support only a small proportion. To the extent a host nation's economy is closed to future employment opportunities for the overseas student, the proportion who come due to the incentive of government support tends to be greater. Socialist countries may be the most generous, supporting the majority of their overseas guests. The Japanese government, which is attempting to rapidly boost Japan's share of overseas students, currently supports 20 percent of all overseas students in Japan. Perhaps another 10 percent receive support from local governments or other sources, while the majority pay their own way (partially through earnings from part-time work). In contrast, only 2.1 percent of the overseas students in the United States were supported by the federal government. About one-eighth were supported by their own government and an additional one-eighth received substantial support from the host institution. The remainder were self-supporting, drawing both on personal funds and income from part-time work.[4]

Students from developing countries tend to specialize in science and engineering. In contrast, those from developed societies tend to specialize in the humanities and arts, especially when they study in developing societies.

A student's choice of field demonstrates considerable sensitivity to perceptions of leading-edge trends in the global economy. In the early 1970s, engineering was the growth area. In the late 1970s, numbers in business and management programs began to increase sharply. Currently, as illustrated in Table 6 with U.S. data, the hot fields are mathematics and computer science.

Countries differ widely in the proportion they send for different levels of study. And, over time, the proportion from particular countries at different degree levels may significantly shift. For example, the proportion from Taiwan seeking graduate study in the United States has steadily increased from 47 percent in 1954 to 80 percent in 1981, whereas the proportion from Japan seeking graduate study has steadily declined from 53 percent in 1959 to 29 percent in 1981. These

Table 5
Recent Trends in Number of Overseas Students in Leading Industrial Societies

Year	U.S.	France	U.K.	W. Germany	Japan	USSR
1975	179,344	93,750	–	53,560	5,573	43,287
1976	203,068	96,409	86,415	–	5,671	–
1977	235,509	104,503	89,974	–	5,755	–
1978	263,938	108,471	90,792	–	5,849	62,942
1979	286,938	112,229	88,037	–	5,933	–
1980	311,882	110,763	77,630	61,841	6,572	–
1981	326,299	113,977	64,071	62,464	7,179	–
1982	336,990	121,111	56,665	66,455	8,116	–
1983	338,894	128,350	55,608	69,644	10,428	42,267
1984	342,113	133,848	56,121	72,252	12,410	–
1985	343,777	131,979	63,522	79,354	15,009	–
1986	349,610	126,762	65,898	77,445	18,631	–
1987	356,190	123,928	67,749	85,749	22,154	105,800
1988	366,354	125,574	72,500	91,926	25,643	115,300

Sources:
United States: *Open Doors 1990/91*, Institute of International Education
France: Ministere de l'Education Nationale, *Reperes et References sur les Ensignements et la Formation.*
U.K.: Lynn Williams, *Country Studies on Student Mobility: Britain* (London: Commonwealth Secretariat, 1990), p. 35; figures include students enrolled in universities, polytechnics, and other higher and further eductional institutions.
W. Germany: Der Bundensminister fur Bildung and Kultur, Studenten au Hochschuler.
Japan: Mombusho, *21 Seiki e no Ryugakusei Seisaku*, 1984.
USSR: UNESCO, *Statistical Yearbook*

Table 6
Distribution of Foreign Students in the United States by Field of Study, 1990/91

	Number	% Change from 1979
Engineering	73,620	-4.4
Business & Management	79,670	+69.7
Mathematics & Computer Sciences	36,840	+139.4
Physical & Life Sciences	35,280	+61.2
Social Sciences	30,810	+36.8
Fine & Applied Arts	19,040	+32.7
Humanities	15,840	+44.7
Intensive English Language	19,300	+58.6
Health Sciences	16,550	+51.1
Education	12,280	-0.5
Agriculture	8,080	-7.6
Other	34,930	+177.2
Undeclared	25,280	+25.6
Total	**407,530**	**+42.3**

Source: *Open Doors: 1990/91*, Institute of International Education

national differences in preference for types of overseas study to fall into three groups:

Early Development. Countries such as Indonesia and Malaysia have relatively modest higher educational systems and/or these systems do not offer equal opportunities to the members of all of the indigenous groups. For this reason, large numbers of students seek either short-cycle courses or first-degree programs in development-related fields such as business, computers, and engineering.

Late Development. Countries that have made greater strides in the expansion of indigenous higher education nevertheless look to overseas institutions for graduate-level programs appropriate for training their scholars and researchers; many of these students pursue disciplines that have commercial value. Not a small number take up research positions in the host countries.

Developed. In countries with longer histories of higher education, many overseas students go abroad to gain an understanding of other societies, and often stay for a year or less. In Asia, Japan is the only highly developed country, and the majority of the Japanese students who go overseas enter first-degree programs, usually in the humanities and social sciences and often for only a year. Compared to most other Asian societies, women are relatively numerous among the Japanese overseas student group. These students are less concerned with contributing to the economic development of their country than to their personal development; thus, many specialize in English as a Foreign Language, the fine arts, or related fields.

At least among overseas students coming to the United States, as illustrated in Table 7, the proportion of overseas students selecting undergraduate, graduate, and other levels of study has been remarkably constant over time. However, in the United Kingdom, there has been an increase in the proportion selecting graduate level studies, presumably reflecting the increasing availability of places for graduate study there, particularly at the masters level.[5]

A much neglected but rapidly growing component of overseas education is the postdoctoral sojourn. While no agency has sought to compile transnational statistics, it is increasingly clear from Organization for Economic Cooperation and Development (OECD) discussions that this deserves more attention. In 1988, U.S. higher educational institutions employed some 20,000 postdoctoral researchers in the fields of science and engineering. Forty-seven percent of these researchers were from overseas (up from 38 percent in 1980).[6]

The number and proportion of foreign postdoctoral researchers in the United States has steadily increased

over the past two decades. Currently the total of foreign postdoctoral researchers in the United States is equal to 3 percent of the total of overseas students, and many of the foreign postdoctoral researchers are former overseas students. They play a vital role in the U.S. system through their contributions both to research and to advising advanced graduate students. Other advanced nations, appreciating this contribution, have begun to imitate the U.S. practice by recruiting increasing numbers of postdoctoral researchers from abroad. For example, most large-scale research projects supported by the Japanese government in recent years have an explicit provision for the recruitment of foreign researchers. The substantial impact that foreign researchers can and do have on the higher educational and research systems of advanced societies is grounds for wondering whose development is most augmented by overseas study—the developing or the developed society.

What Accounts For Country Differences In Flow?

In most cases, the decision to go overseas, including the search for information and finances, is a largely personal effort. But this effort is shaped by the national

Table 7
Distribution of Academic Level for Foreign Students in the United States, Selected Years: 1963/64 to 1990/91

Academic Year	Academic Level			
	Undergraduate	Graduate	Other	All levels
1963/64	48.2	41.9	9.9	100.0
1969/70	47.2	45.3	7.3	100.0
1973/74	50.4	44.3	5.3	100.0
1979/80	58.1	36.2	5.7	100.0
1981/82	59.5	35.5	5.0	100.0
1983/84	57.9	52.9	3.9	100.0
1984/85	57.8	35.8	6.6	100.0
1985/86	54.6	38.5	6.9	100.0
1986/87	51.8	41.8	6.4	100.0
1987/88	49.6	43.9	6.5	100.0
1988/89	47.1	45.2	7.7	100.0
1989/90	47.7	43.9	8.4	100.0
1990/91	46.6	44.7	8.7	100.0

Source: *Profiles: The Foreign Student in the United States 1985*, and *Open Doors, 1990/91*, Institute of International Education

Figure 3
Factors Influencing the Flow of Student to a Host Country (X)

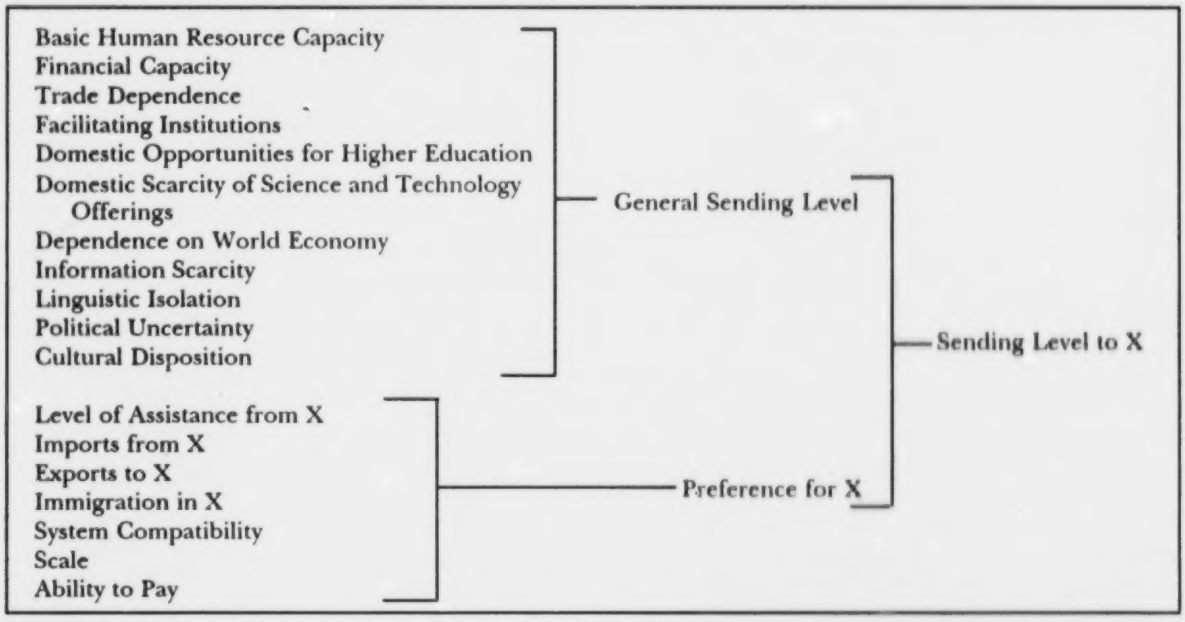


Table 8
Country of Origin of Foreign Students in Selected Host Countries, 1990

UNITED STATES		FRANCE		GERMANY	
Leading Places of Origin	Number	Leading Places of Origin	Number	Leading Places of Origin	Number
1. China	39,600	1. Morocco	23,975	1. Turkey	11,654
2. Japan	36,610	2. Algeria	10,949	2. Iran	9,958
3. Taiwan	33,530	3. Tunisia	6,999	3. Greece	6,190
4. India	28,860	4. Cameroon	4,867	4. Austria	4,963
5. Korea, Rep. of	23,360	5. Libya	4,706	5. United States	4,123
6. Canada	18,350	6. Iran	3,953	6. Korea, Rep. of	3,863
7. Malaysia	13,610	7. Germany, F.R.	3,931	7. China	3,275
8. Hong Kong	12,630	8. Madagascar	3,420	8. France	3,273
9. Indonesia	9,520	9. United States	3,214	9. Italy	3,843
10. Pakistan	7,730	10. Syria	3,087	10. Yugoslavia	2,816
UNITED KINGDOM		**CANADA**		**JAPAN**	
Leading Places of Origin	Number	Leading Places of Origin	Number	Leading Places of Origin	Number
1. Hong Kong	7,386	1. Hong Kong	7,472	1. China	18,063
2. Malaysia	6,517	2. China	5,043	2. Korea, Rep. of	8,050
3. United States	5,358	3. Philippines	4,408	3. Taiwan	6,484
4. Germany, F.R.	3,493	4. United States	3,800	4. Malaysia	1,544
5. Irish Republic	3,460	5. Japan	1,859	5. United States	1,180
6. France	3,206	6. France	1,599	6. Indonesia	948
7. Greece	2,866	7. Malaysia	1,599	7. Thailand	856
8. Singapore	2,052	8. United Kingdom	1,408	8. Philippines	479
9. Spain	1,746	9. Singapore	1,228	9. Hong Kong	422
10. Cyprus	1,558	10. Taiwan	641	10. Bangladesh	394

Sources:
United States: *Open Doors 1990/91.* France: Ministere de L'Education Nationale. *Reperes & References Statistiques, sur les Enseignements et la Formation,* 1989, Table 10.AF. Germany: German Federal Ministry of Education and Science. *Education Statistics for the Federal Republic of Germany,* 1990–91, pp. 90–91. United Kingdom: The British Council. *Statistics of the Students from Abroad in the United Kingdom, 1988/89,* Table 6, p. 38. Canada: The Canadian Bureau of International Education; figures are for 1989.90. Japan: The Japan–United States Educational Commission; figures are for 1990/91.

context of each student. Thus it becomes appropriate to look at country-level variables when accounting for flows.

The determinants of flow can be thought of in terms of two distinct processes as depicted in the upper and lower halves of Figure 3: (1) The factors that influence national differences in the likelihood of going overseas, and; (2) the factors affecting the likelihood that a student from a given country will select an institution in a particular host country (e.g., the United States) for his or her study.

The relationship between these factors and the country-level flow indicators for 1965, 1975, and 1985 have been extensively analyzed, and Appendices A and B report some of this. The following is one interpretation of the data.

Why Do Countries Differ In Their Likelihood of Sending Students Overseas?

1. *To the extent that a national education system provides large numbers of young people with the basic qualifications for study at the tertiary level, more young people from that nation will consider overseas study.*

The tendency to go overseas, however, may be offset by the availability of a large number of domestic places. The United States and Japan, which have the world's highest tertiary level enrollment rates, send few students overseas relative to their population size. The large number of Malaysian overseas students occurs in part because of the shortage of domestic higher education places, especially for the academically able Chinese minority. In Korea and several other rapidly developing countries, higher educational systems have undergone rapid expansion in recent years, but this has not significantly affected the propensity for going overseas. There are three ready explanations for this seeming anomaly:

(a) domestic higher educational expansion reflects a large and unmet private demand that is only partially accommodated by the increase in domestic places;

(b) to staff the newly created domestic institutions, a new pool of scholars with training at the graduate level is required;

(c) the rapid quantitative expansion of domestic higher education is usually not accompanied by qualitative upgrading, thus enhancing the attraction of overseas education both for undergraduate and especially for graduate level programs.

2. *In that much of the demand for overseas study is focused on the scientific and technical fields, the extent to which the domestic system provides opportunities in these areas may curtail the tendency to go overseas.*

Singapore, whose educational system places relatively more stress on these fields at both secondary and tertiary levels, sends fewer students than Hong Kong, where the higher education system has had a humanities bias. Recent reforms in Hong Kong higher education will reduce the contrast.

3. Nations that conduct their education in the same languages as the leading receiver nations are likely to send more students than do nations that use local languages.

Thus, Southeast Asia, Hong Kong, and Singapore, which rely on English as the main language of instruction, send more students relative to their population than do countries such as Thailand and Indonesia. Of course, in many countries that rely on an indigenous language as the primary medium of instruction, metropolitan languages tend to be introduced at the secondary level, thus providing students with the rudimentary language skills necessary for studying overseas.

4. *Nations with higher standards of living will send relatively more students than poorer nations.*

In the more affluent nations, greater numbers of families are likely to have the resources to cover the considerable expenses associated with overseas study. Similarly, governments are likely to have larger revenues, and hence, more funds available to finance overseas study. It is partly because of their recent economic success that the Middle Eastern nations have begun to send large numbers of students overseas.

5. Regardless of a nation's standard of living, the number of students going overseas is likely to increase in times of rapid economic growth, and decrease in periods of recession.

Thus, in recent years, as oil prices have declined, nations whose economies are highly dependent on oil revenues have been sending fewer students overseas.

6. *Students in large countries can choose from a wide variety of domestic higher educational opportunities, while those in small countries, which have fewer domestic opportunities, are more likely to consider foreign study.*

Thus, for example, in Asia, relatively larger numbers of Taiwanese and Sri Lankans go overseas compared to mainland Chinese and Indians. In Europe, students in tiny Luxembourg are as likely to think of pursuing higher education in a nearby country as in their own.

7. *To the extent that a national economy is dependent on international transactions, the young people of that nation will see their careers linked with the actions of multinational corporations and foreign economic centers.*

It is partly for this reason that the sending rates of Hong Kong and Singapore are high compared to those of other Asian countries. The direction of student flow is likely to overlap with the direction of the international transactions; while these countries were once closely linked to the United Kingdom, and their students went primarily to the United Kingdom, today they have closer ties with the United States.

8. *With the cumulative experience of a country sending students overseas, the practice becomes institutionalized.*

Young people in the secondary schools and universities spend much of their time discussing overseas study

options, and profit-making firms are established to facilitate such searches. In the case of advanced societies, reciprocal study abroad programs are negotiated. With the institutionalization of overseas study, a country's tendency to send students overseas is likely to stabilize, even if other conditions alter.

9. *In nations with enduring ethnic or racial tensions, there will be an especially strong tendency for minority students to seek study overseas.*
For example, in Malaysia and Indonesia, members of the Chinese minority are especially likely to seek overseas study at their own expense. In contrast, Singapore's Indian minority is most likely to go overseas. In Sri Lanka, it is the Tamils who view overseas study as a means of improvement.

10. *Nations experiencing political uncertainty are also likely to send large numbers of students overseas.*
With the announcement that Hong Kong would revert to the People's Republic of China in 1997, the numbers from Hong Kong quickly increased. Similarly, the continuing political uncertainty in Cyprus, Lebanon, and Sri Lanka contributes to overseas study decisions.

11. *In the early 1980s, Arab unity was firmer, and thus there was a greater flow among the Arab nations.*
This has slowed as relations between these Middle Eastern nations have become more troubled. In Southeast Asia, some regional flow has been stimulated by ASEAN. India receives a significant number of students from the overseas Indian communities (e.g., in Nigeria, Kenya, and Malaysia), and this flow will certainly increase in the future. The incipient trend of regional economic and political associations is likely to induce new interest in student mobility among member countries.

Where Do Overseas Students Go?

A parallel issue is the destination selected by students going overseas. As noted earlier, currently one-third of all overseas students are in the United States and an additional one-third are in France, Germany, and the United Kingdom. Table 8 indicates the countries in 1985 that sent relatively large numbers of their students to these leading host countries.

In the past, national ties following the colonial era were an influential factor in international student flows. This continues to be so, as illustrated by the preference of several of France's former African colonies to concentrate on France and a continuing bias in certain of Britain's former colonies towards U.K. education. But, in most instances, these colonial ties seem to have become subordinated to other linkages. Specifically:

1. *Cold war related linkages have redirected national patterns of flow.*
The shift of the national flows of such nations as Korea, Taiwan, India, Thailand, Vietnam, Iran, and Egypt to the United States can be dated from the period when each of these nations became the focus of large amounts of technical and military assistance from the United States. Similarly, the large numbers of Indonesians going to Germany is a by-product of extensive German technical assistance to that country.

2. *The volume of economic exchange among nations also influences the direction of student flow.*
The rapid step-up in U.S. economic involvement in Southeast Asia in the early 1950s helps account for the shift in that region's student flow from Europe to the United States. Currently, Japanese economic involvement in the region has resulted in increased student flow to Japan.

3. *To the extent that nationals from a particular country take up residence and citizenship in a host country, this is likely to enhance the flow of students between the two countries.*
Especially since 1965, following the change in U.S. immigration laws, large numbers of Asians have settled in the United States. Prior to 1965, the majority of Americans of Asian origin had come from Eastern Asia; the new Asians are as likely to come from Southeast and South Central Asia. It is partly due to the information and financial assistance Asian-Americans have provided that their countrymen and women have selected the United States as a destination for overseas study.

4. *Cultural linkages also facilitate the flow between national systems.*
As English has increasingly become recognized as the international language, it has come to be emphasized as the second language in educational systems around the world. Their familiarity with English has directed students to host countries such as the United States, the United Kingdom, Canada, Australia, New Zealand, and India, where it is the language of instruction. Of course, a second group of nations rely on French as either the national or a key language, and these nations

send large numbers to France. Yet another group of nations have Arabic as a common language, and this leads to considerable interchange. Spain receives the majority of its overseas students from Latin America where Spanish is widely spoken.

5. *The absorptive capacity of host-country educational systems is also an important factor.*
In European societies, by the mid-1970s, foreign students were taking up between 5 and 10 percent of all places in higher education, causing domestic educators to question the advisability of further admissions. In contrast, in the vast American system, overseas students constituted less than 3 percent and overall have caused little burden.

Indeed, it could be argued that the influx of Asian students has provided important assistance in at least some sectors of American higher education. During the mid-1970s, the U.S. domestic demand for science and engineering education declined. It was at this very time that the foreign demand in these specialties increased. The Asian students prevented the closing or shrinking of many of the departments in these fields. This convenient complementarity of supply and demand was not as evident in the continental European systems. In contrast, 40 percent of the United Kingdom's graduate students now come from overseas.

Japan, India, and the Philippines are other nations with large higher educational systems, and while these nations currently are not prominent among host countries, each possesses considerable absorptive capacity for future waves of overseas students.

6. *The great diversity of institutions in the American system enables the accommodation of students with varying levels of preparation and motivation.*
Weak students can be accepted in junior colleges where, through remedial training, they acquire the skills necessary for participation at higher levels. Students with minimal English skills can improve their language skills in the numerous English as a Foreign Language centers. Flexible admissions policies that enable students to come throughout the calendar year are another distinctive feature of the American system relative to the European alternatives.

7. *Financial considerations also play an important role in student choice.*
The United Kingdom's decision to charge full-cost fees to overseas students led to a sharp decline in the number of students seeking education in Britain. Higher education in the United States is not inexpensive, but foreign students often discover opportunities for financial assistance or for part-time work on or off campus, thus enabling them to cover a substantial portion of their expenses. Similar opportunities are available in Japan but less so in the United Kingdom.

Recent Changes And Looking Ahead

During the period following World War II, the phenomenon of going overseas for study has become widely institutionalized. All governments have official agencies to supervise at least a part of the outflow, and in most countries, numerous private entrepreneurs have established firms to assist students who wish to go overseas for study. On the receiving side, organizations such as the Institute of International Education (IIE) and the British Council, as well as international student services offices of particular universities, have been established to provide services to facilitate overseas study.

The traditional pattern of overseas study has involved students applying as individuals to foreign institutions. With the increasing volume of interested students, a number of other arrangements have emerged. The United States pioneered the study abroad concept wherein American institutions set up facilities overseas to expedite the movement of large numbers of their students into particular foreign settings. This same pattern is now being replicated by Japanese institutions. Yet another trend is for institutions of major receiver countries to set up branch campuses in countries where large numbers of prospective students are known to be present. American institutions began this practice in Malaysia and now are replicating it in Japan. Thus, as the volume of overseas study increases, new institutional arrangements will emerge. These arrangements may further institutionalize the practice of overseas study, insuring its long-term expansion.[7]

With the extensive institutionalization of overseas study, the overseas experience increasingly becomes an extension of domestic study as much as an alternative to it. The nations with the largest domestic higher educational systems also send the largest numbers of students overseas; and, in most cases, as the domestic systems have expanded, the volume going overseas has also increased. For example, in the case of Korea,

following the government's 1982 declaration of its intent to double the number of domestic higher educational places, the number of students going overseas sharply increased.

In the 1970s, a number of small countries with weak or restricted higher educational systems had exceptionally high sending rates and were also leading the list of top senders. It could be argued that the logic of economies of scale led them to send students overseas rather than to invest extensive funds in the development of indigenous higher educational institutions. These small countries continue to send large numbers, but it may be that they have reached the limits of their capacity to export students, at least to advanced countries. Meanwhile, several much larger countries that have had relatively low sending rates have begun to increase their sending rates and to steadily expand the number of students they are sending overseas.

These larger countries still have enormous human resource reserves, so there is no way of judging the future volume of their student export. But it is safe to say that these countries are capable of further expansion in this area. In the late 1970s, population size had a negligible relation to several of the flow indicators, but by 1985 it had a strong positive relation to the total volume sent overseas and to the long-term growth of that volume. The large countries that have shown gains over the last decade include China, India, Pakistan, Korea, and Japan. Indonesia's volume, while showing a short-term decline since 1986, has nevertheless increased substantially over the past decade. In contrast, Brazil and Nigeria are two large countries where the volume has recently declined, reflecting the economic difficulties they have encountered.

Financial capacity is also an important factor in the ability of nations to send students overseas. In the late 1970s, the financial capability of Middle Eastern nations suddenly improved due to the increase in oil revenues engineered by the Organization of Petroleum Exporting Countries (OPEC); a useful indicator of this change was the short-run improvement in the per capita Gross National Product (GNP) of these nations. With this sudden economic improvement, many of these nations sharply increased the rates and volume of their overseas sending. But by the early 1980s, the OPEC advantage had weakened, and the level of sending from these countries also sagged.

A contrast with the short-term blip in the financial capacity of the OPEC nations has been the steady growth over the past two decades in the financial capacity of most Asian nations. In global terms, the Asian region has enjoyed the most continuous and rapid long-term economic growth of all the major regions. The newly industrialized nations of Korea, Taiwan, Hong Kong, and Singapore lead in this trend, followed by Japan (which shows steady growth but at a slower average rate), Malaysia, Thailand, and China. India, Pakistan, and Indonesia have also experienced moderate long-term growth in per capita GNP. Many nations in Africa and Latin America and several in the Middle East have experienced negligible to negative growth over the same period.[8] Whereas, in the 1970s, GNP per capita had a strong correlation with sending rates and absolute volume, by the mid-1980s average growth in GNP per capita from 1965 to 1986 was more strongly associated with overseas sending. For example, 1986 GNP per capita had a negligible Pearson product-moment correlation of .03 with the 1978-1987 growth in volume, compared with a correlation of .39 for average long-term growth in GNP per capita.

The relative value of currencies also influences financial capability. The currencies of Asia's leading export-oriented economies had been, during the 1980s, under strong pressure to revalue relative to the dollar. The sharp jump in the value of the yen between 1986 (250 yen to the dollar) and 1987 (130 yen to the dollar) has made U.S. higher education much more attractive to Japanese consumers, and thus from 1986 to 1988 the number of Japanese students coming to the United States experienced the sharpest increase since the early 1950s. The currencies of Korea and Singapore have already experienced modest appreciation and will no doubt be under pressure for further appreciation over the next several years. As those currencies strengthen, the national purchasing power for U.S. higher education will correspondingly improve. These currencies also appreciated relative to the English pound and the French franc with a similar consequence. In contrast, the currencies of several Latin American and African countries were devaluated over the 1980s, thus curtailing the possibility of students from these countries to finance their overseas study.

For a variety of reasons, the expanding Asian student flow of the past decade was increasingly directed toward the United States. Historically, large numbers

of Asians have immigrated, and outside of the Asian region their most common destination has been the United States. While earlier migration was primarily from Eastern Asia, over the past two decades the United States has received a large number of immigrants from Southeast and South Central Asia, thus broadening the Pacific Rim links. The immigrant communities provide assistance as new waves of their compatriots pursue overseas study. Finally, the American system,where classes are taught in English and which has such an extraordinary range of opportunities in terms of quality and program, is more accessible than the other choices available to Asian students.

But it may be that this Asia-to-America flow will face competition from the incipient preference of Asians for more local destinations. Over the past five years, the rates of increase in the Asian flow to neighboring countries has increased. Japan, for example, has mounted a major campaign to increase its attractiveness as a host for overseas study and hopes to receive 100,000 students by the twenty-first century. The Japanese program is running on schedule; it promises to launch Japan into the number two position among receivers.

This incipient shift from long distance to regional locus for overseas study reflects similar trends in Europe, the Middle East, and the Americas. It thus becomes important to gain a better understanding of the centripetal forces in the newly emerging global system.

Looking to the 1990s, several Latin American nations show promise of improved economic conditions. Similarly, a number of African nations are beginning to rebuild their economies and moreover are benefiting from a new concentration of technical assistance. Thus, these areas may once again begin to increase their share of the overseas student market.

Parallel to these prospective developments in the New World, it is likely that the rapid changes in Eastern Europe will lead to a new wave of overseas study, directed primarily at destinations in Western Europe where there are long historical ties and compatible educational systems.

Conclusion

Foreign study, for a great variety of reasons, is clearly an expanding phenomenon that yields much benefit to most of its participants. The concern in this essay, along with surveying trends, has been to introduce and compare several indicators useful for a sensitive analysis of this phenomenon.

A variety of paradigms guide thinking about overseas education, including that which relates overseas training to development. It would be difficult to argue that targeted overseas education has a strong relation to development. Perhaps no more than 10 percent of the students from the developing world travel to other countries for study under targeted programs; the great majority of students, even from developing countries, fund their own studies from savings or income they earn or borrow while abroad.

A considerable proportion of the students who go overseas for study stay in the countries where they receive their education. The tendency is somewhat less for those in targeted programs, but the differences may not be as great as imagined; many, after returning to their home country for awhile, once again head abroad.

Students who take up employment in host countries contribute both to the economies of the host countries and their countries of origin. Many send financial remittances back to their countries of origin.[8]Many also transfer knowledge. It is impossible to draw a balance sheet of who most benefits from these transactions. It may be best to think of the main beneficiary as a new international order that is being constructed through the complex of personal and organizational linkages that emerge from these transactions. It remains to see how the new trend towards regionalism in overseas study will relate to this emerging international order.

APPENDIX A

Zero-Order Correlations of Selected Country Characteristics with Overseas Sending Rate (by Region)

	Total	Africa	America	S. Asia	W. Asia	E. & S. E. Asia	Europe	Oceania
1. Human Resource Capacity[a]	-0.192	-0.101	-0.41	-0.274	-0.267	-0.171	-0.466	-0.841
	(121)	(33)	(24)	(5)	(12)	(29)	(27)	(5)
2. Financial Capacity[b]	0.36	0.208	0.804	0.988	-0.157	0.201	0.328	-0.558
	(135)	(47)	(28)	(7)	(11)	(29)	(22)	(6)
3. Facilitating Institution[c]	0.118	0.152	-0.25	0.863	0.516	0.18	0.055	-0.571
	(143)	(42)	(29)	(8)	(13)	(36)	(27)	(6)
4. Domestic Opportunities for Science & Technology Studies[d]	-0.069	-0.186	-0.191	0.364	0.293	-0.009	-0.329	0.93
	(76)	(18)	(13)	(5)	(10)	(20)	(21)	(3)
5. Population Size[e]	-0.122	-0.265	-0.262	-0.218	-0.344	-0.199	-0.307	-0.609
	(152)	(49)	(29)	(8)	(14)	(37)	(27)	(6)
6. English as Language of Instruction[f]	-0.009	-0.047	0.668	-0.152	-	-0.041	-	-0.886
	(152)	(49)	(29)	(8)	(14)	(37)	(27)	(6)
7. Exports as % of GNP[g]	0.484	0.461	0.564	0.999	0.237	0.482	0.542	-0.057
	(122)	(45)	(27)	(5)	(10)	(22)	(21)	(5)

[a]Number tertiary Students/number secondary students

[b]Per capita income, U.S. $

[c]Number of students overseas in 1975

[d]proportion of domestic higher education places in science and technology subjects

[e]Population in 1985

[f]Dummy variable (English is Medium of Instruction in Schools; Yes = 1, No = 0)

[g]Value of exports 1985/GNP 1985

Notes

1. An insightful summary of the international dialogue is found in Alice Chandler, *Obligation or Opportunity: Foreign Student Policy in Six Major Receiving Countries.* 1989. New York: Institute of International Education.
2. Several of the paradigms that structure thinking about overseas study are summarized in William K. Cummings, *East-West Center Degree Student Alumni.* 1986. Honolulu: East-West Center Press.
3. UNESCO's annual *Statistical Yearbook* presents a matrix of the numbers sent and received by various countries based on the latest reports from the major receiver countries. For the 1987 yearbook some of the latest reports were as old as 1982, while others were for 1986, only one year behind. For some of the analysis reported in Appendix B, data from several yearbooks were collated so as to get reports as close to the focal years of 1965, 1975, and 1985 as possible. Earlier reports of the analy-

APPENDIX B

Zero-Order Correlations of Selected Features of Host (X)–Sender (Y) Relations and Proportion of Foreign Students from Sending Countries That Go To Leading Host Countries

	HOST COUNTRIES						
Features of Host (X)–Sender (Y) Relations	**USA**	**Canada**	**Australia**	**U.K.**	**France**	**Germany**	**Japan**
1. Assistance from X[a]	.295	.515	.772	.337	.780	.321	.651
2. Exports to X[b]	.847	.945	.951	.911	.862	.914	.582
3. Language Compatibility[c]	.283	.339	.162	.289	.677	.424	–
4. Ability to Pay[d]	.124	.193	-.130	.180	-.195	.313	-.109
5. Immigrants from Y in 1980[e]	.398	–	–	–	–	–	–

[a]ODA Funds from X/ Total ODA Funds 1985

[b]Exports to X/ Total Exports 1985

[c]Dummy Variable: Host Country Language is also instructional language of Sender

[d]Per Capita Income 1985

[e]Total Immigrants from Sender in 1980

sis include William K. Cummings, "Trends Seen in the Flow of Asian Students to the United States" *NAFSA Newsletter* 40, Number 5. (March, 1989):1, 10-19; continued in Number 6 (April/May, 1989): 13-15, 26; William K. Cummings, "Going Overseas for Higher Education: The Asian Experience," *Comparative Education Review* 28 (May, 1984): 241-257; William K. Cummings and Wing-Cheung So, "The Preference of Asian Overseas Students for the United States: An Examination of the Context," *Higher Education* 14(1985): 403-23; Kiong Hock Lee & Jee Peng Tan, "The International Flow of LDC Students to DC's: Determinants and Implications." Education Department, World Bank, 1983; and Larry Sirowy and Alex Inkeles, "University-Level Student Exchanges: The U.S. Role in Global Perspective," in Elinor Barber, ed., *Foreign Student Flows*. 1985. New York: Institute of International Education, pp. 29-85.

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6. National Science Board. *Science and Engineering Indicators-1989*. 1989. Washington, D.C. United States Government Printing Office, p. 54.
7. Gail Chambers and William K. Cummings, *Profiting from Education*. 1990. New York: Institute of International Education.
8. World Bank, *Social Indicators of Development 1987*. 1987. Washington, DC: The World Bank, pp 6-7.
9. Robert Goldfard, Oli Havrylyshyn, and Stephen Magnum, "Can Remittances Compensate for Manpower Outflows," *Journal of Development Economics* 1984, 15:1-17.

Chapter 3

Potential Impact of Technology Upon Overseas Education

Willard D. Shaw

The course of human history has been greatly affected by educational exchanges between individuals, cultures, and nations. To date, these exchanges have relied basically on two models: the "Marco Polo" and the "Gutenberg." The Marco Polo model is the oldest mode of intercultural interplay and education. It relies on the physical transportation of human beings from their home area to a place where they can find and absorb the knowledge and experience they are seeking. Each year hundreds of thousands of people temporarily move from one country to another in search of learning experiences they cannot find at home, including over 350,000 foreign students in U.S. institutions of higher education. Some travel under official sponsorship for short or long-term educational experiences; others are funded by private companies or agencies. Thousands rely on personal sources of funding. Sometimes the flow of brain power is in the other direction. Expatriate experts are recruited and sent to developing countries to teach either directly or through on-the-job training of host country counterparts.

The Gutenberg model relies on print material as the main conduit of information between nations. English, French, and Spanish reign as the major international languages for the transfer of such information. Books, journals, and magazines are purchased by individuals and organizations as self-study sources of new knowledge. The Soviet Union, for example, has long been one of the largest subscribers to U.S. journals on science, technology, and military affairs. In recent decades, audio and video cassettes have become additional means of information transfer. Many developing country institutions, however, are often hard pressed to find the foreign currency to purchase international journals and other print materials. In some countries, a fairly modest journal subscription list would consume the entire acquisition budget of a university library.

A Need for a New Model

These two models rely on the flow of human beings and print material among countries. Both have been effective to a large degree, but they are not adequate to meet all the varied educational needs of developing countries. Learners don't always succeed in learning what they need to know, and they don't always return to their home countries to practice what they have learned. Print materials neither always reach the right people in the right language nor always contain information that is applicable to the local situation. Print is also a static medium whose contents can become outdated even before being published. Print does not provide for the additional interaction and feedback that can clarify ideas and help the reader assimilate the information better. Some new models need to be added to this mix that take advantage of new technologies and provide more flexibility to meet the multifaceted needs of developing countries. Modern telecom-

munications networks represent unparalleled resources that have great potential for being utilized as effective and flexible delivery systems for education and training opportunities. Other hardware systems, many based on the computer chip, can be connected to telecommunications networks to transform them into teaching and learning tools.

Telecommunication Systems

After a million years of few long-distance communication forms other than messengers, drums, and smoke signals, telecommunications entered into an extremely rapid growth period over the last century and a half. Starting with Samuel Morse's invention of the telegraph in 1844, human society's capability to communicate across great distances has leaped forward. Thomas Edison's invention of the telephone in 1876 and Guglielmo Marconi's development of wireless telegraphy in 1895 greatly expanded the reach and flexibility of telecommunications systems. By 1905 transatlantic wireless transmissions had begun, and in 1920 farsighted entrepreneurs established the first radio station—and soon began selling time for commercials. Only four years later, the United States was linked coast to coast by radio signals.

The dissolution of colonial empires hastened the expansion of communications facilities into what became called the Third World, as newly independent countries began to invest in infrastructure building. A major hindrance to the development of telecommunication networks, however, was the limitation of cable and radio transmission systems. Setting up poles and cable is a labor- and capital-intensive effort that can only be justified economically when it is done to link major urban areas where heavy use of the facilities would occur. Radio transmissions are often unreliable over great distances without a series of repeater stations to pass the signal along. Microwave towers built within sight of one another are the most reliable form of wireless signals, but their construction can be almost as costly as a telephone network. Rugged terrain in many parts of the world mades the entire effort extremely difficult even when money is not a problem. As a result, entire areas of the earth—mostly in the poorest countries—were almost entirely left out of the growing international communications network.

Figure 1
Geosynchronous Satellite Orbit

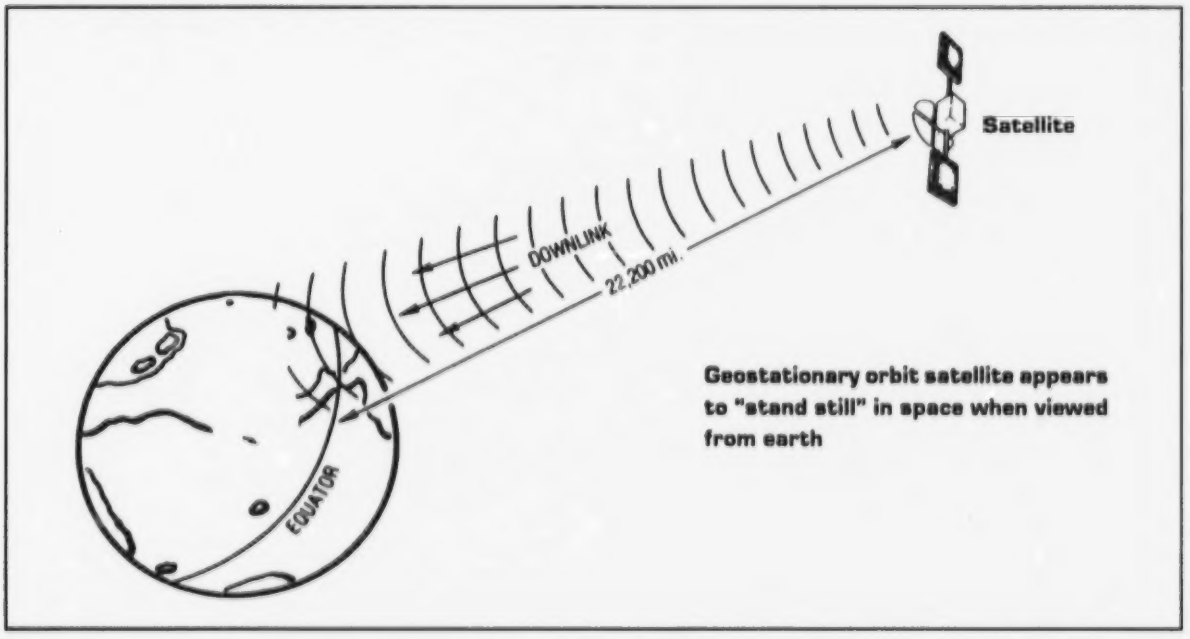
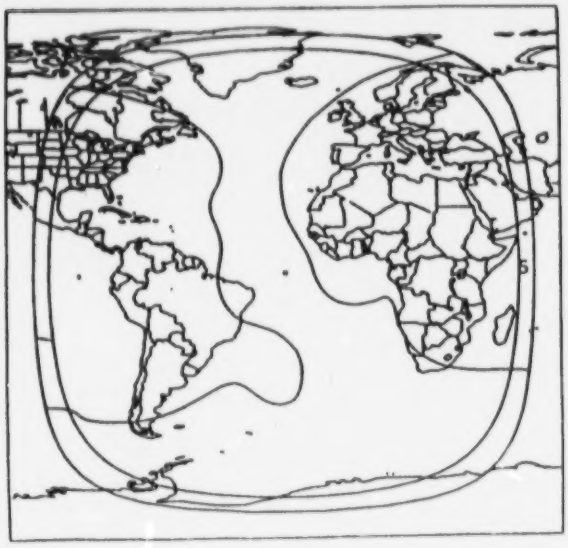


Figure 2
INTELSAT Satellite Footprint



In 1945, while studying an idea for a space-station that would serve as a refueling depot for space ships leaving the earth, science fiction author Arthur C. Clarke thought of another idea for using such a facility. "There is at least one purpose for which the station is ideally suited and indeed has no practical alternative," he wrote. "This is the provision of world-wide ultra-high-frequency radio services, including television."[1]

Clarke estimated that such a station, placed in orbit around the earth over the equator at a distance of approximately 22,300 miles, would revolve in synchronization with the spin of the earth and thereby maintain its position relative to the ground below it. Thus was born the idea of communications satellites in geosynchronous orbit. Clarke correctly hypothesized that only three of these satellites placed at strategic points in equatorial orbit around the earth would be capable of receiving and retransmitting signals to almost the entire planet.

To many lay people, Clarke's proposal smacked of the science fiction he so handily crafted. To many communications engineers, however, his idea indicated a possible means to create a communications system that was impervious to geographic barriers—if the technology could be developed to implement it. Such technology would include a reliable satellite design, a means to launch it into space, and a ground system to transmit, receive, and distribute signals to and from the satellite. Even Clarke did not expect to see such a system in operation in his lifetime, but in this he was wrong. He has been using communications satellites for the last 30 years.

Clarke's idea was fully put into action with the launch of Syncom I in 1963. It was the world's first geosynchronous satellite and was capable of receiving, amplifying, and rebroadcasting signals back to earth. From its position, Syncom I was able to see over one third of the earth's surface and thus was able to relay signals coming from any point within its area of coverage or footprint.

Beyond the technological breakthrough that it made, Syncom I was very significant in a second way, particularly for developing countries, because it also led to the creation of the International Telecommunications Satellite Consortium (INTELSAT)—a nonprofit cooperative with the goal of providing worldwide satellite communications services at a reasonable cost to all nations of the world. INTELSAT launched its first geosynchronous satellite, Early Bird, in 1965 and entered into a period of rapid growth as an organization. From an initial group of 11 share-holding nations, INTELSAT expanded its membership to include over 112 countries, although over 180 countries actually use its services. INTELSAT is currently engaged in talks to incorporate the members of the Soviet satellite system into its ranks. From a single satellite with 240 telephone channels, INTELSAT has built a network of 15 high-powered satellites girding the globe and carrying telephone, telex, radio, and television transmissions. It has become the major carrier of international telephone traffic.[2]

INTELSAT: Boon for Developing Nations

INTELSAT's mandate to provide worldwide satellite services at an affordable cost has been a boon to many developing nations, most of whom could not afford the cost of developing their own satellite network. Through INTELSAT, all nations are able to link themselves into the global communications network. Almost 30 countries also rely on INTELSAT to complement their domestic communications services. China, Peru, Nigeria, and other nations on almost every continent have

arranged long-term leases for channels on INTELSAT satellites and have built a network of ground stations for domestic as well as international communications. INTELSAT also assists developing nations with planning services and the procurement of low-cost earth stations.

Although INTELSAT is the largest operator of satellite services in the world, it is not the only one. Commercial companies, particularly those in the United States and Europe, have developed and launched privately financed satellites to provide services within their own countries and have sold their services to governments and other private companies. Some developing nations have also created their own domestic satellite systems. In 1976 Indonesia became the first developing nation to do so by launching its Palapa A-1 satellite. Indonesia leases excess capacity on Palapa to fellow Association of Southeast Asian Nations (ASEAN) members: Thailand, Malaysia, Singapore, and the Philippines. Mexico, Brazil, and India are other developing nations that have had the need, resources, and expertise to create their own satellite networks for domestic service. The Arab world is also served by its own ArabSat for regional broadcasts. Most of these domestic and regional satellites have excess capacity that could possibly be used for educational purposes.

Almost all nations outside the Soviet bloc still rely on INTELSAT for their international connections as per the international agreement creating INTELSAT. In recent years, however, INTELSAT's monopoly on international services has been challenged. The privately owned PanAmSat launched a satellite in 1989 and provides services between the Americas and Europe with a major focus of its marketing on Latin American nations. In Asia, a consortium of British, Hong Kong, and Chinese companies have cooperated in the launching of another satellite, AsiaSat, for the Asia region. Orion Network Systems, another privately-financed group, is preparing to launch a satellite in 1993 to service the North America–Europe region and parts of Africa. While there is some fear that the entry of private companies into the international communication market will have an adverse effect on INTELSAT, there is little doubt that this competition will increase the availability of different types of satellite services and most probably keep satellite communication costs low.

Communications Satellites Now a Global Network

From a single communications satellite in 1963, the global network has grown to over 150 satellites in geosynchronous orbit, not including military ones. Countries and companies can buy or lease entire satellites or segments of them as large as a transponder capable of transmitting a television channel (at annual rental fees ranging from a million dollars) or as small as a single telephone channel costing $500 a month. Over the years, satellites have increased in size, power, capacity, and durability, thus leading to a decrease in the required size and price of ground stations and the cost of satellite services. The 1965 Early Bird satellite had 40 watts of power, a capacity of 240 telephone channels or one television channel, and a life expectancy of 1.5 years. The INTELSAT VI spacecraft launched in 1990 has 2,600 watts of power, a capacity for 24,000 telephone channels plus 3 television channels, and a life expectancy of 13 years. Using digital multiplication techniques, those 24,000 channels can be effectively increased to 120,000 two-way telephone circuits[3]. Despite large increases in the costs of satellites, launch services, and insurance, annual channel costs have declined over the years when inflation is taken into consideration.

As geosynchronous satellite systems continue to improve in sophistication and power, some engineers have been re-examining the idea of low-orbit satellites floating hundreds of miles above the earth instead of 22,300 miles. One cooperative effort led by Volunteers for Technical Assistance (VITA) is in the final stages of launching a low-orbit satellite called PacSat.[4] In its scheduled orbit, PacSat will not remain stationary above any region; it will circle the planet, passing any given point on earth several times a day. PacSat will serve as a high-tech carrier pigeon, receiving and transmitting messages of up to 20 pages in length to points in its pathway. Using a system called packet radio, users will be able to contact the satellite while it is passing their location, retrieve any messages put on the satellite by other users, and give the satellite any messages they want to send. The ground units will be low-cost, battery-powered, portable, and able to operate unattended. The main purpose of PacSat is to provide low-cost communications services for information sharing and technical assistance to scientists

and technicians in developing nations. VITA itself maintains an information network as well as a cadre of 5,000 volunteers who are experts in a wide variety of fields.

A much more ambitious low-orbit satellite system is now being designed by the communications giant Motorola. The Iridium system would use a total of 77 low-orbit satellites in different orbital paths to ensure that almost every point on earth would be within range of at least one of the fast-moving satellites. Such a satellite system would provide worldwide telephone coverage directly to customers on land, sea, or in the air using small portable telephones. Motorola is convinced the system is feasible, but getting the proper clearances for its operation promises to be a very challenging task because it will cross all borders and directly reach customers in all nations.

Exploring Alternate Technologies

Satellite engineers are also exploring other ways to reach directly into the home and business without having the middle point of a major ground station controlled by the local telecommunications company. Powerful direct broadcast satellites (DBS), which can beam a radio or television signal directly to a small antennae on the roof of a home, are now in development. COMSAT, the U.S. telecommunications company, has developed a rooftop antenna that is one foot square. When manufactured in quantity, COMSAT expects the price of these antennaes to drop from an initial cost of $1,000 to less than $400.[5] One of the reasons for the slow implementation of DBS technology has been question about the political and economic acceptability of a system that can cross borders so easily without the control and supervision of national governments.

A satellite technology that has been rapidly spreading among businesses is VSATs—very small aperture terminals. VSAT networks consist of a controlling hub earth station of medium size (> 5 meters) and numerous small receiving terminals (< 1.5 meters) that are low-powered and very inexpensive. Companies with many locations, such as Chrysler Corporation, J. C. Penney, Walmart, Sears, and large banks, have installed such networks to create their own private communications networks separate from the public system.[6] VSAT networks are largely used for two-way data transfer, such as sales information and new product orders; however, they can be upgraded to carry two-way audio and one-way video signals. J.C. Penney, for instance, uses its VSAT video capability to show new products to all of its buyers, thus reducing their need to travel. VSATs are now being introduced into the developing world as well. Indonesia, for example, has signed a contract with Scientific Atlanta, Inc. to develop a network with up to 2,000 locations.

Satellite technology has rapidly progressed in three decades to a point where it has threatened to overshadow cable systems and become the premier system for new long-distance communication networks. Being impervious to distance, satellite technology has the flexibility to reach any spot on the earth where a small terminal can be placed, whereas cable needs a long period of painstaking installation, mile after mile, along the entire route. Technology again, however, has given new life to cable with the development of fiber optic cable made from glass. This new type of cable uses light to carry the transmitted signal, and its carrying capacity is tremendous. The first fiber optic cable was laid across the Atlantic in 1988 by a consortium led by American Telephone & Telegraph (AT&T). It has a capacity of 40,000 simultaneous telephone calls. In 1989, another consortium led by U.S. Sprint and Cable and Wireless Inc. installed a second fiber optic cable with a capacity for 80,000 calls. At present fiber optic cable is only cost-effective between large metropolitan areas where communications traffic is very heavy. Further technical developments, however, may not only increase its total carrying capacity but also provide ways in which it can be used for less intensive routes.

From Analog to Digital

All transmission systems—satellite, cable, and microwave—are undergoing a major shift from analog to digital data streams, which promise to open up a whole new era of information transfer. Integrated Services Digital Network (ISDN) will be the mode of operation of the future. ISDN will make possible the design of networks that will provide access to a wide variety of services, including fax, telex, audio, data transfer, electronic mail, and even video. ISDN will necessitate an upgrading of the current telephone cable network,

which is one reason it will be slow to develop in the United States, where billions of dollars have already been invested in the existing cable system. Once this is replaced, however, a single connection in an office or home will allow for the transmission and reception of integrated voice, data, and video signals.

One hundred and fifty years of telecommunications development has now brought us to the point where instantaneous communication can be achieved between any points on earth. A multibillion dollar network of communications facilities covers the globe and links all countries together. Small earth terminals can be set up and linked to a satellite in a matter of hours for emergency communications. The 1.5-meter terminal used by the Cable News Network (CNN) to provide news reports out of Baghdad during the 1991 Persian Gulf war is an example of such technology. Larger and more permanent facilities can be established in a matter of weeks. No place need remain isolated. The current network grows significantly each year with continued investments of hundreds of millions of dollars. Telephone, telex, data, radio, and television traffic continue nonstop around the world.

To date, many significant efforts to use this tremendous technological tool for educational purposes have been undertaken. Most of the resulting projects have been carried out within nations, although some successful experiments have been carried out internationally. It is crucial that more be done to utilize this great resource for the exchange of information and the expansion of educational opportunities for people in both the developing and developed worlds. When combined with other complementary technologies, two-way telecommunications networks can be turned into powerful educational instruments that can meet a variety of needs and allow nations and cultures to share experience, knowledge, opinions, and skills. (Descriptions of some of these technologies and distance education programs are given in the Appendix.)

Technological Applications To Overseas Education

While it is true that the telecommunications networks of most developing nations are not currently as pervasive and reliable as those in developed nations, billions of dollars are being invested to expand and upgrade these networks. Although these systems have been slow to expand into rural and remote areas, virtually all national capitals and most major metropolitan areas of the world are already tied into the global network. Almost the entire planet is covered by satellite technology, thus providing the possibility of linking even the smallest village into the worldwide network. Increased use of fiber optic cable will also bring expanded communications capacity to some Third World nations.

Great potential exists for utilizing telecommunications for a much higher level of educational exchange than now occurs under the prevailing models. The technologies discussed above and in the appendix can be harnessed and exploited to improve both the quality and quantity of educational opportunities available to developing and developed nations and to open up increased contacts between people and institutions all over the world. In a world that is increasingly interdependent, a tremendous opportunity now exists for explosive growth in the two-way sharing of information, opinions, and learning opportunities. While the flow of state-of-the-art technological information may be primarily from developed to developing nations, the developed world also has a great deal to learn from the two thirds of the world's population that lives in the Third World. Some possible applications of these technologies are as follows.

Increasing Information Resources Within A Country

One of the major problems faced by Third World nations is access to information. Most libraries are generally poor. Other sources of information are very limited. Access to even those few good sources is difficult for people living outside the capital city even in those countries where other large urban centers exist. Information and learning opportunities are limited and they are usually concentrated in certain geographic areas.

One of the main results of recent technological advances has been the great expansion in man's ability to store and manage information. At present many databases are on mainframe computers that can be accessed through a personal computer linked by modem and telephone line. These databases cover many areas in science, agriculture, education, law, medicine, and

other disciplines. Specialized databases may concentrate on tropical agriculture or certain types of law. Database users pay for the cost of their telephone call and a fee for accessing the information based on duration of use and/or amount of information withdrawn.

International calls from Third World nations, however, are often very expensive—sometimes 2 to 4 times the cost of a similar call originating in the United States. Many telephone companies try to finance local service by overcharging on long-distance calls. Disregarding costs, it still would be relatively simple to establish links from developing nations into international databases. It might also be possible to negotiate special rates for both the data link and the use of the database.

Another option would be to begin to bring those databases to the country itself. Although mainframe computers are used in developing nations, it would not be necessary to rely on such an expensive piece of equipment. Microprocessor-based hardware such as personal computers, videodiscs, and CD-ROM have made it possible to put a wealth of knowledge into a compact space and then manipulate it to serve the needs of the learners. Entire databases and information sources, such as encyclopedias, atlases, and census reports, can be placed on discs for easy access through inexpensive terminals. In the future such information may actually be issued first on such discs rather than in paper form. These discs can be updated with additional discs. Video and slide pictures can also be placed on disc for illustration, and they can be used by local teachers as visual aids for classes.

During the first stage of transfer to the Third World, these resources may only be made available to researchers, faculty members, and graduate students. As costs of the hardware and software decline—as they are bound to do with mass production—they can be provided to undergraduates and other groups spread throughout the country. With a long history of mass production and use behind it, this equipment would also be rugged enough to work reliably in less than ideal Third World conditions.

Providing Short-Term Technical Assistance

One of the problems with the Marco Polo model of information exchange is that the physical transportation of people is not very flexible, while it is fairly expensive. A participant funded by the U.S. Agency for International Development (USAID), coming to the United States for a program of less than three months, is budgeted at $10,000 plus the costs of air travel and staff time to manage the visit. A senior technical expert going to a developing nation for a month and earning USAID's top daily rate would cost about $11,000 (for salary and per diem) plus air fare. There are several drawbacks to these strategies beyond their cost. The timing of both visits depends upon the availability of the right learning opportunity for the right person at the right time. The best person to visit the United States from a certain institution may not be able to go when the program is available or may be too valuable to that institution to be allowed to leave at the required time for the duration of the training. The expert best equipped to really meet the developing nation's needs may also face the same problem.

The reliance upon physical trips also forces the resolution of various technical assistance needs into a similar time frame—two weeks to three months. Less than two weeks is generally not cost-effective considering travel costs and time. It is often difficult to get people away from their regular jobs for more than three months. Whatever the need, it generally has to be addressed by a visit or series of visits of those durations. But what about the cases where the need can be satisfied by getting input from one or more experts over only a period of hours? Or where only a few weeks of assistance are required but spread over a period of a year—perhaps for designing a study, refining a questionnaire, training interviewers, reviewing data, and analyzing results? The current system is not flexible enough to respond to these types of needs. The assistance is either not forthcoming or is arranged to fit the time schedules of the people who are being asked to travel.

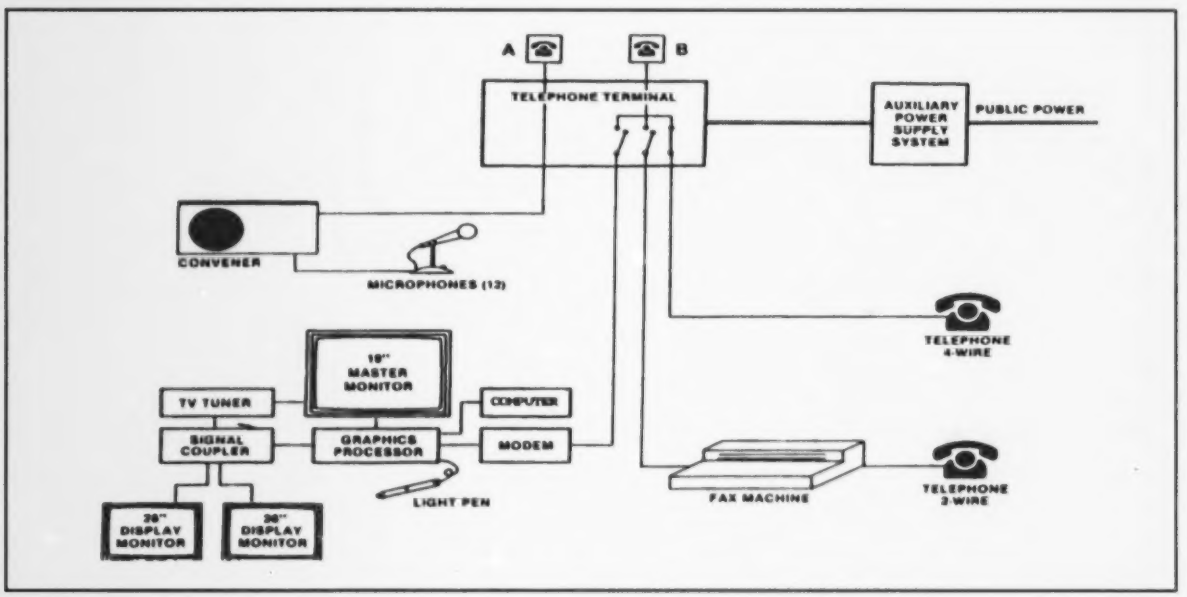
Telecommunications can be a flexible delivery system to meet such needs if a system and institutional relationships are in place. As discussed earlier, VITA is seeking to address some of those needs through a low-orbit satellite that will enable people in developing countries to seek technical help with a minimal investment. Live, two-way telecommunications links can serve this purpose even better. When coordinated by an organization like VITA or a university, requests for assistance can be handled promptly and appropriately.

Expert panels can be assembled without asking anyone to travel beyond the nearest telephone. U.S. participants could call into an access link from any telephone, perhaps using a toll-free number. Background print materials could be sent to them in advance by mail, fax, or computer. Such expert panels could be assembled on a one-time-only or continuing basis.

In the developing country, participants could use a similar arrangement or an audio-conferencing format if a group were participating. For $10,000, a site could be equipped with an international telephone line connected to an audio-conferencing unit, fax machine, computer, and graphics/freeze-frame video unit, thus providing voice, graphics, text, and video facilities. (Figure 3 depicts a slightly more elaborate classroom layout using two telephone lines.) The cost of the telephone call could be reduced if it were initiated in the United States or if a special arrangement was negotiated with the local telephone company. A major advantage for the developing country is that many people could participate at their end and benefit from the experience. A U.S. trip for a staff member would directly involve only one person because of the costs. The institution would then have to rely upon a trickle down approach for sharing that traveler's newly found knowledge with others. There are also opportunity costs involved when a staff member travels abroad. Someone must be hired to handle the traveler's work load or it will not get done.

Another possibility in lieu of travel to the United States for training would be to bring more training materials to the developing world. Increasing numbers of courses are being developed for videotape and videodisc. These telecourses are developed by a single institution or consortium and then marketed to other organizations on cassette or through on-the-air transmission. Stanford University, for example, has completed a series of engineering courses, which it has marketed nationally and internationally. Interactive videodisc training programs could be another source of training. By bringing these materials into the country, many more people could directly benefit. These courses and training modules could be used in their entirety or as supplementary materials for ongoing courses and training programs. The language of instruction would be a problem for their mass use; dubbed versions could be prepared in local languages if needed.

Figure 4
Sample Electronic Classroom



Such a strategy of relying on telecommunications links and self-contained learning materials is not a total substitute for travel between countries. Such trips often bring unexpected learning opportunities that serve to broaden the traveler's thinking beyond his or her original goals. Human relationships are also more easily developed in face-to-face contact, and these relationships may ultimately prove to be the most beneficial aspect of the entire trip. This new strategy, however, does open up other options for supplementing and supplanting some of the existing ways in which information and learning is transferred and adds another flexible weapon to the arsenal of development. It could also be used to provide follow-up training and monitoring of people who have had overseas training. Too often, participants return to their country and institution shining with the glow of their recent experiences only to have that glow—and many new ideas—gradually wear away as they return to business as usual. With no support group or colleagues who have shared in their experiences, these people find it harder to maintain the momentum and enthusiasm for implementing the new ideas they have conceived while abroad. Follow-up sessions delivered via audio-conferencing can once again revive the feelings of group cohesion among participants who underwent similar training, and they can be an important forum for maintaining interest in and momentum for positive change.

Providing Long-Term Educational Assistance

In addition to the above strategy for meeting short-term needs, a country or region might consider making a more long-term, formal arrangement for technical assistance and educational development by tapping into existing resources via telecommunications. This could be done by cultivating a special relationship with one or more institutions in the developed world based on educational need and cultural and linguistic ties. Francophone African nations, for instance, might wish to develop their linkages with France. An alternative model would be for a country or institution to align itself with some sort of educational broker that could manage the development of programs on the other side of the link.

The first case might be implemented by developing a cooperative relationship between the country and an association of educational institutions, for example the Midwestern University Consortium for International Assistance (MUCIA), that would provide a wide range of expertise directly related to the country's needs. The U.S. domestic telecommunications network could be used to link U.S. campuses, while a satellite link through INTELSAT or another system like PanAmSat could connect the United States to other nations. A U.S. coordinating office would work with the developing nation to assess its needs and develop special programs to meet those needs or tap into existing programs. This type of network might evolve into a dedicated network using leased or purchased facilities and running full time. To ensure the technical quality of the connection, the developing nation might wish to install its own satellite terminal also dedicated to educational uses. An INTELSAT Vista terminal capable of carrying two audio channels can be installed for less than $100,000. This would be particularly easy to do if the consortia already had existing telecommunications networks. The Indiana Higher Education Telecommunications Service (IHETS), for instance, could be connected with the University of the West Indies audio-conferencing system in a matter of hours to create a ten-nation, multi-institutional network.

A second possibility is to have the developing nation establish a technical link with one of the existing satellite networks like NUTN, BCSN, or NTU (see Appendix). Instead of arranging for programs specially designed to meet that country's needs, the country could opt to select only programs that are already being broadcast. The country would then pay the normal fees charged to a receiving site along with the costs of the communications lines. Latin American and Caribbean countries that are in the same time zones as the United States would have few problems connecting into live programs. Countries in Africa and Asia might face major logistical problems due to time zone differences.

Whichever option is followed, the impact of this programming in the receiving country would be greater if the incoming signal were connected into the existing domestic network and distributed nationally. A U.S. television transmission, for instance, could be tied into the national television distribution system. If interaction with the viewing audience was desired, phone lines could be leased for call-in discussions. In those cases where English is not well understood, additional

audio channels could be used to provide simultaneous translations in one or more other languages for live programs. Taped programs can be dubbed in local languages if needed.

Synergy: Distance Learning, Overseas Study

These electronically-delivered educational opportunities could be utilized in conjunction with overseas educational programs to develop a program that would better meet the needs of many groups of learners. In combining the two modes, one would enhance the overall impact of the other. Those seeking official sponsorship for overseas study could be required to take one or more distance education courses first as a screening device to determine who was capable of handling the academic workload. Taking such courses would also be an ideal orientation to western academic life. Students would make the adjustment to what might be a new study system while all other factors in their daily life remained the same. Students who are thrown into academic life in the United States for the first time generally are forced to meet this new challenge while their senses are also being bombarded with the challenges of a whole new life, culture, and work role as a student. They have to meet all of these challenges without the normal support system of family and friends that they would have at home. By delivering some courses to them while still in their home country, they would only be asked to meet one challenge at a time—the academic one—while all other support structures were in place.

Another possibility is to develop split-site programs wherein some of the course work would be done in the home country and the rest in another country. This would probably be a cheaper alternative and would relieve the negative impact upon institutions and companies that lose staff members for long periods of time when they are forced to leave the country for study. Students could gain release time from their regular job while they completed some of the credits toward their desired degree. Having completed some of these credits beforehand, students would not have to be away from their families and jobs for extremely long periods of time. With this type of option, it would also be more likely that senior staff who are unable to leave their work and family responsibilities for long periods of time would be able to pursue further studies.

Providing Worldwide Higher Education

Given the advanced state of worldwide communications and its continuing rapid development, it is also time for international donors to consider the creation of a development television channel. Just as CNN is available in most countries of the world, this channel could be a similar channel (or channels) completely dedicated to sharing U.S. expertise and providing educational opportunities for people in any country—developed or developing. For formal academic courses, it would be an open university of the air. Broadcasts could be made in at least three languages simultaneously. A consortium of U.S. universities could provide the courses, academic support, and credit toward a degree or some other credential.

For people already involved in the process of development, the development channel could offer specialized in-service training in certain areas, such as a certificate or master's program in the management of development. U.S. industries could also present their own training programs as an altruistic offering with hopes that the people trained by them–and the favorable publicity gained—would bring about greater sales of their products.

With the advent of ISDN and the inevitable growth of the telecommunications sector in developing nations, one can see in the future hundreds of hours of educational programming becoming available to prospective learners throughout the world through a single connection, such as the development channel. Fully interactive programs might be available on an invitation basis only. Broadcast programs could be turned on at will with automatic billing occurring if needed. Top teachers and high quality materials would be available to all. People who could afford the equipment, installation, and subscriber fees would be able to get these services directly in their homes. Others would go to community learning centers where multiple connections would allow individuals or groups to tune into the development channels.

Conclusion

The portrait that has been painted of these technologies is not a futuristic one. These technologies exist today and will only grow more powerful and pervasive in the future, while in all probability their unit and operational costs will decline. The global telecommunications network will continue to expand, providing ever-increasing services to all parts of the globe. Developing countries will continue in their rush to develop their own telecommunications infrastructure, lest they be left behind in the world's move into the information age. For educators, the question will not be if they should use such technologies, but how to use these technologies effectively to increase access to high-quality educational opportunities that meet the learning needs of those people looking for such opportunities.

The challenge is not one of hardware. The hardware already exists. Engineers and manufacturers will continue to expand the capabilities of these potential learning tools so that those capabilities will usually surpass the capacity of teachers to find appropriate ways to use them. The major challenge will not be transmission costs, either. As we have seen, the headlong rush of technological development often results in lower costs. Mass production, more efficient technologies, and increased competition act to lower prices over time. The main challenge will be to our ingenuity and commitment. Without content or a purpose, the hardware is nothing. Entrepreneurs have readily seen and marketed the value of such technologies for business and social purposes. The world's atmosphere is charged with electronic streams of telephone, data, fax, telex, television, and radio signals. To date, little of that electronic storm has contained intelligently orchestrated efforts to train and educate.

There will certainly be many obstacles to overcome: linguistic, cultural, political, and regulatory barriers; the need for innovative leadership; the financing of telecommunications growth, educational networks, and program development; and organizational and managerial problems. Surmounting these obstacles will require all the ingenuity and commitment educators can muster, but it must be done. Today's developing technologies present us with unparalleled tools for reaching those who wish to learn and providing them with a wide range of learning resources and opportunities. It is up to the educational community to grasp these tools and learn to use them in the most effective way possible.

APPENDIX

Complementary Technologies

A range of equipment that can be used alone or in conjunction with a telecommunications link to provide educational and training services is now in full use or in development. Broadcast television and radio, cable television, and video and audio cassettes and players are well known to most people in developed nations. Other newer technologies are not so well known.

Live Transmissions

1. *Audio-conferencing Convener/Microphones*
   When connected to a telephone line, a convener with microphones converts an individual voice link to a group conferencing link. The convener contains an amplifier and speaker that can be effective with groups ranging to the hundreds.
2. *Audio-Conferencing Bridge*
   A bridge can link dozens or even hundreds of telephone lines together into one conferencing connection. Private companies such as AT&T provide bridging services on a demand basis.
3. *Compressed Video*
   The transmission of full-motion video is very costly because it requires a very wide bandwidth to carry all of the picture frames (24–30 per second) and other information, such as color. Compressed video technology greatly reduces the needed bandwidth by compressing the video information it transmits, so that it takes up less than a fortieth of that required by full- motion video. One form of compressed video can be transmitted via a special (56Kb) telephone line.
4. *Facsimile*
   In less than a decade, the fax machine has become as ubiquitous as the personal computer. Hooked to a telephone line, it can transmit exact copies of any document fed into it. Computers can be equipped with a fax board (a modem with fax transmission capability) that enables them to send documents

directly from their disk to a fax machine and vice versa.

5. *Full-Motion Video*
This is the normal, publicly broadcast television signal. Some educational users utilize Instructional Television: Fixed Service (ITFS) systems, which broadcast locally on special channels to specific locations equipped with television sets fitted with decoder boxes.

6. *Freeze-Frame Video (Slow-Scan Video)*
Freeze-frame technology provides a means of sending single picture frames over a regular telephone line. A video camera is used to take a picture and a microprocessor then converts that picture into electronic signals, which are transmitted to a similar unit at the receiving site or sites. Freeze-frame units are often used for medical purposes, particularly the transmission of x-rays.

7. *Modem (Modulator–Demodulator)*
The modem enables one personal computer to transfer data over telephone lines to another. Special voice-data modems can intersperse data with voice signals, thus allowing text and graphics to be sent simultaneously over a single telephone line.

8. *Telewriter (Electronic Blackboard)*
This equipment enables handwriting to be transmitted live through a normal telephone line. The user may write directly upon a tv screen (using a light pen) or upon a special electronic pad. Participants at receiving units can also write upon the transmitted picture.

Storage and Replay

1. *CD-ROM (Compact disc-read only memory)*
CD-ROM provides the capacity to digitally store tremendous amounts of information (up to 300,000 pages) on a 4.75 inch disc along with a logical file structure to facilitate the retrieval of that data. Very large databases, such as encyclopedias, telephone books, and atlases, can be stored. This information, including text, graphics, pictures, and sound, can be rapidly accessed and manipulated through a personal computer.

2. *Personal Computer (PC)*
Complex software programs enable the personal computer to do many tasks, such as word processing, data base management and analysis, graphics production, and programmed learning. PCs can augment their own power by controlling other machines such as CD-ROM drives and videodiscs.

3. *Videodisc*
A videodisc can hold up to 54,000 frames or images on each side as well as two sound tracks. These frames can be used to store still or motion pictures or additional audio signals. The videodisc can become an interactive learning tool when combined with a microcomputer that allows users to access individual frames or sequences of frames. Some school districts have recently given permission for videodisc programs to be designated and purchased as textbooks for kindergarten through 12th grades.[7]

Telecommunications Applications

Some of the above technologies have been linked with telecommunications networks for a variety of instructional and managerial purposes. The following section describes some of these projects and illustrates the range of networks that are currently in place and their programming goals.

United States: Statewide Application

Many of the earliest attempts to use telecommunications networks for educational purposes in the United States have been by states seeking to increase the quality and availability of higher educational opportunities and serve the needs of the community beyond the campus. Many universities and some public school systems have installed satellite terminals to link them into one or more sources of educational programming.

1. *Educational Telephone Network (ETN): University of Wisconsin*
Inaugurated in 1965, ETN is a statewide audio-conferencing network that now links 250 locations throughout the state. Audio-conferencing equipment placed at higher education campuses, courthouses, hospitals, libraries, and adult education and community centers deliver programs that reach over 40,000 participants each year.

2. *Indiana Higher Education Telecommunications System*
Created in 1966 primarily as a link among Indiana's major universities including Purdue, Indiana Uni-

versity, and Indiana State University, IHETS delivers university courses, seminars, and adult education programs primarily through a one-way video/two-way audio connection.

3. *LearnAlaska Instructional Telecommunications Network*
Given its size, rugged terrain, and undeveloped telecommunications infrastructure, Alaska was a natural candidate for satellite services. Earth terminals placed in small villages provided local health aides with audio and freeze-frame video links to doctors at regional hospitals for consultation purposes. The LearnAlaska Network, operated by the University of Alaska, develops and delivers formal educational programs aimed at the primary, secondary, tertiary, and adult level using audio and computer conferencing and broadcast television.

United States: Nationwide Applications

With the advent of satellite communications, the potential for nationwide programs was greatly expanded. Because distance was no longer a factor affecting costs, there was more freedom to put together networks based on common interests other than shared political boundaries. Adjustable earth terminal antennae permitted users to switch from one satellite to another to obtain different programs. Most satellite consortia deliver a combination of courses and special programs developed by their own members and packaged courses and events that are developed by higher education institutions or private companies outside their regular membership.

In the commercial sector, private companies with multiple sites found it more efficient and cost-effective to conduct some of their internal business via telecommunications rather than face-to-face meetings. Travel substitution became a goal of many companies that sought to use audio-conferencing or video-conferencing in order to save on travel, per diem, and opportunity costs.

1. *Black College Satellite Network (BCSN)*
BCSN originally started in 1985 as a satellite connection for traditionally black colleges and universities throughout the country but has now expanded to include over 110 campuses around the country. BCSN seeks to enrich and expand the quality and availability of curricula and personal and professional development programs through satellite delivery of programs directly to participating campuses.

2. *Community College Satellite Network (CCSN)*
CCSN was created by the American Association of Community and Junior Colleges in 1988 for the delivery of courses and other educational programs. CCSN also offers satellite programs directed at business and industry. Receiving colleges may purchase these programs to remarket them in their local community for profit, or they may opt to serve as local hosts for the program and receive a fee from CCSN.

3. *National University Teleconference Network (NUTN)*
NUTN is a consortium of over 250 institutions of higher education founded in 1982 to develop a telecommunications system for higher education. Like other networks, all NUTN members have downlinks for the reception of audio, video, and computer conferences. A small proportion of the membership actually contributes programs to the network and has installed more expensive uplinks for transmission. NUTN broadcasts programming in the arts, business, engineering, and science. NUTN, like many of the university networks, also transmits programming during non-prime hours when receiving institutions can tape programs for later use by students and faculty.

4. *National Technological University (NTU)*
The NTU is a private, nonprofit organization created in 1984 primarily to meet the advanced educational needs of engineers, scientists, and technical managers. NTU offers 508 courses taught by faculty from 21 different universities. Learners earn master's degrees in computer science, electrical engineering, engineering management, computer engineering, and manufacturing systems engineering. Over 60 corporations and government agencies sponsor NTU's work. Programs are delivered live directly to sites via one-way video and two-way telephone links.

The NTU satellite channel is shared with another nonprofit consortium: the Association for Media-Based Continuing Education for Engineers (AMCEE). This consortium of 33 engineering universities provides state-of-the-art in-service training to working engineers via live courses and videotape.[8]

5. *TI-IN*

TI-IN is a for-profit company that produces and delivers educational programming aimed at meeting the special curriculum needs of high schools throughout the country, particularly those that are too small or remote to afford teachers in all desired subjects. Over 20 high school courses are offered for credit to any site in the country with a TI-IN satellite dish. More than 125 hours of live, interactive programming are delivered to 21 states each week. TI-IN also broadcasts programs directed at teachers and school administrators, including a 400-hour staff development package that is offered annually.[9]

6. *Private Companies*

To improve efficiency, reduce travel costs, and facilitate in-service training and the flow of up-to-date information, many U.S. companies have installed their own telecommunications networks. Organizations such as the American Red Cross, IBM, Chevron, Walmart, Sears, and Chrysler Corporation have installed VSAT networks connecting hundreds or thousands of sites. The networks are used for business and technical meetings, quality and inventory control, training, and data transfer.

Other companies, such as U.S. Sprint, operate a network of audio and video-conferencing rooms, often located in major hotels, for use on a demand basis by any customer. There are almost 70 such rooms in the United States run by different companies and another 200 located in other nations.[10] Other companies stand ready to supply assistance on the planning of video-conferences from the training of people in its use to supervising the leasing of the required telecommunications links.

International Applications

The educational use of telecommunications has not been as extensive in the international arena as it has in the United States. Some interesting programs have been carried out and a few networks have been permanently established, but the experience to date has consisted mostly of short-term interventions rather than long-term investments in continuing programs.

1. *National*

a. SISDIKSAT: Indonesia

Indonesia cooperated with USAID to create an audio-conferencing network linking 12 universities on 5 islands. SISDIKSAT focuses primarily on the development and delivery of undergraduate courses. Receiving campuses assign junior faculty members as local tutors for the courses with the goal of eventually having them learn to teach the course themselves locally. The system has also been used by the Indonesian Open University to train local tutors and for a wide variety of administrative meetings.[11]

b. Educational Television Network of China

Under INTELSAT's Project Share, the People's Republic of China(PRC) began a massive distance education program broadcasting advanced academic courses 6 hours a day to 45 locations across the country.[12] The success of this project led the PRC to lease two transponders from INTELSAT and expand the number of earth stations to 5,000. Millions of students currently receive instruction through this system.

2. *Multinational*

a. UWIDITE

The University of the West Indies (UWI), an institution serving 14 English-speaking Caribbean nations, worked with USAID to create an audio-conferencing network called UWIDITE: the UWI Distance Teaching Experiment. Begun in 1983, UWIDITE linked six nations: Jamaica, Trinidad & Tobago, Barbados, St. Lucia, Dominica, and Antigua. Courses are delivered daily. In-service training programs for doctors, nurses, and teachers have also been extremely successful.[13] UWIDITE has been expanded to include St. Vincent, St. Kitts & Nevis, and Grenada.

b. PEACESAT

Using an obsolete satellite provided by NASA, a consortium called the Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT) used a single audio channel to link 16 ground stations in 10 nations: Fiji, Tonga, Papua New Guinea, Trust Territory of the Pacific Islands, New Hebrides, Gilbert Islands, American Samoa, Western Samoa, Australia, and U.S. sites in California and Hawaii. PEACESAT brought Pacific peoples together for programs on health, agriculture, education, and cultural

exchange and assisted in disaster relief when needed. The University of the South Pacific (USP) in Fiji used it to deliver educational programs and administrative meetings. The U.S. Congress has allocated funds for a switch to a new satellite.[14]

Developed–Developing Nation Exchanges

An increasing number of experimental projects are being carried out to demonstrate how telecommunications links can be used for development purposes. To date, no large-scale permanent programs or linkages have been organized and funded to meet the long-term educational needs of countries or regions.

1. *Course Delivery*
   Faculty members from Harvard University and Boston University medical school have cooperated in a joint effort with Beijing Normal University in China to teach courses on artificial intelligence and cell biology over a regular telephone line. Using a sophisticated freeze-frame video unit, they were able to deliver their lectures accompanied by still video images, text, and telewriting. Students in Beijing were able to ask questions and send their own pictures and notations.
2. *In-Service Training*
   Miami Children's Hospital has conducted a number of video-conferences on various topics in health education with Latin American and Caribbean countries, including one which reached over 3,500 physicians.
3. *Seminars*
   A series of lectures on the subject of water management were broadcast from the University College in Dublin, Ireland to the University of Amman in Jordon. The audience included graduate students, technicians, and engineers. The King of Jordan and President of Ireland attended and spoke at the initial meeting.
4. *Telemedicine*
   The Kenyatta medical school in Kenya and the Makerere medical school in Uganda were linked to the University of Newfoundland's health sciences center in Canada for consultation services. The results of EEG and EKG tests are sent via a special transmission unit to Canada over a dedicated telephone circuit. The University of Newfoundland has also linked up with the UWIDITE system in the West Indies for medical consultations.

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Chapter 4

Meeting the Human Resource Needs of Developing Countries: The Contribution of Overseas Education

Viswanathan Selvaratnam

Overseas higher education has been used by developing countries to acquire advanced knowledge, skills, and technology. It has been pursued with vigor over the past three decades due to the national imperative to develop technological capability and the private need to improve career prospects.

This paper assesses the contribution of overseas higher education in meeting the human resource needs of developing countries. The paper will begin by examining the push and pull factors that have stimulated student flows from developing countries to developed countries, as well as between developing countries and within regions. It will then evaluate the implications of overseas higher education for issues of educational relevance, indigenous capacity, and the brain drain. Finally, it will suggest a strategic approach for developing countries in acquiring relevant training overseas.

Why Overseas Higher Education?

Two trends are fundamentally transforming the development process: (1) the integration of the world economy, and (2) the technological revolution in information/communications and other scientific fields. While these trends began decades ago, they have gathered momentum in recent years and will accelerate even more rapidly in the next century.

For developing countries to alleviate poverty, raise productivity, and participate in the world economy, it is imperative for them to develop technological capability in their human resource base.[1] To do so requires pursuing a two-pronged strategy of educational development, simultaneously:

- Universalizing basic education to build the broad foundation of literacy and numeric and problem-solving skills that enables citizens to use information, enhance their trainability, practice family planning, and improve the welfare of the next generation; and
- Providing opportunities for some (including the self-selected) to acquire intermediate and advanced knowledge, skills, and technology in order to meet the need for technical manpower at the middle and high levels.[2]

The rapid growth of Japan and the newly industrializing countries (NICs) of Korea[3], Taiwan, Hong Kong, and Singapore, all of which have made sustained investments in education and training, attests to the central importance of developing the capability to select, adapt, and improve technology.

Developing countries, however, have faced enormous financial and institutional constraints in developing their national systems of higher education. Financially,

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they have to make the hard choice of how much resources to allocate to each subsector of education. Allocating too little to the primary level will undermine the very foundation of education on which the higher levels are built. On the other hand, even allocating a very high proportion of the public expenditure to the tertiary level does not guarantee adequate support for quantitative expansion and qualitative improvement.

Laboratories, libraries, and other facilities are very costly, and the salaries of faculty members are high. Given the inherently specialized nature of disciplines in higher education, equipping a laboratory for electrical engineering does not facilitate teaching and research in biotechnology or computer science. Likewise, a professor of medicine cannot teach quantum mechanics.

Institutionally, there has been persistent difficulty in recruiting well-trained national faculty members and researchers to fill positions at the tertiary level. In many developing countries, particularly during the post-independence decade, many vacancies at the universities were, and, to an extent, continue to be filled by extremely expensive expatriate staff. Even so, it is not easy to recruit scholars with updated, advanced training in specialized disciplines. These constraints to the expansion of higher education have contributed to the acute shortage of middle- and high-level manpower, which, in turn, impedes development.

These financial and institutional constraints have affected the quality of teaching and research. This has led many developing countries to send their best and brightest secondary school leavers to Europe and North America for training in engineering, agriculture, geology, and so on. This quest for advanced knowledge and technology overseas began in the 1950s and 1960s. In those early decades, a high proportion of those studying overseas were sent by their governments or received some form of scholarship given by international organizations, foreign governments, and private foundations.

By the 1970s, as a result of the huge expansion in primary and secondary education in the earlier decade, the number of secondary school leavers swelled, putting tremendous pressure on the higher education system. Demand for university places exceeded the capacity of the universities to absorb all the eligible applicants. As universities could not cope with the huge increase in the pool of applicants, they were forced to be highly selective; they could not continue to bear a greater burden without the quality of education they deliver being fundamentally affected. An admission ratio of one in ten is not uncommon in many countries.[4] The unsuccessful or well-qualified applicants who can afford an overseas education go abroad.

The vocational shift towards engineering, computer science, and business administration has further fueled the private demand for overseas higher education. The prestige and international economic value of elite Western university degrees have provided added incentives. Thus, the trend of studying abroad has continued to this day—with growing magnitude. From the 1970s onward, the proportion of self-financed students increased dramatically. For example, in Australia the number of self-financed overseas students increased from 6,004 in 1978 to 15,725 in 1988.[5]

Today, Malaysia, Hong Kong, and Saudi Arabia have more students studying in the United States, Canada, and the United Kingdom than at home.[6] Overseas higher education is estimated to cost Malaysia—in both government and private expenditure—$1,460 million annually, while the six national universities and the International Islamic University, which Malaysia hosts, have a combined budget of $220 million per year.[7]

Small countries with limited resources, for example Cyprus and Mauritania, are even less able to develop and maintain viable university systems and therefore have to rely on overseas higher education for training their high-level manpower. For example, the small Malaysian state of Sarawak, before it became part of Malaysia, had to depend mainly on overseas education for its requisite high-level needs.

In the 1990s, as the technological revolution and the globalization of commerce accelerate, higher education will become truly "internationalized."[8] Given the financial constraints, a limited technological capability, and the lack of strong teaching and research centers in many developing countries, the quest for advanced knowledge overseas is the key to meeting the challenge.

However, this is a reciprocal relationship; industrialized countries are eager partners in this exchange. A number of their universities have taken great strides in admitting foreign students and facilitating scholarly exchange. A few have taken the initiative to strengthen the international and cross-cultural content of the

curriculum. The view is that students and researchers in the industrial world benefit intellectually from interacting with their foreign counterparts, and the university benefits from interfacing with a globalized economy.

Sponsors of Overseas Education

Overseas higher education was initiated through various uncoordinated and fragmented schemes. There was no systematic and coordinated effort to acquire an in-depth and comprehensive picture of what should be the most appropriate human resource base for developing countries economies at different levels and stages of development. Apart from country-initiated-and-financed overseas training schemes, external assistance has played an important role in sponsoring overseas higher education, particularly during the 1950s, 1960s, and 1970s.[9] For example, in 1949, Harry Truman enunciated the Point IV Program to help developing countries build their human resource base. Higher education featured prominently in this program, and scholarships and awards were given to students from developing countries to pursue their studies in the United States.

Exchange schemes were set up largely by bilateral and multilateral agreements between developed and developing countries, as well as between developing countries. For example, under the auspices of the U.S. Agency for International Development (USAID), Nigerian university staff were estimated to have received 590 man-years of training in the United States between 1960 and 1976.[10]

In the English-speaking world, the major host countries to overseas students are the United States, the United Kingdom, Canada, New Zealand, and Australia. In the non-English speaking world, France, Germany, Japan, the Netherlands, Belgium, and the Scandinavian countries are the major host countries.

The Soviet Union and Eastern Europe also have substantial training programs for developing country students. Within the developing countries, China, India, and Egypt host a large number of students from developing countries. (In 1990, according to UNESCO data, China hosted 4,993 foreign students; Egypt, 10,176; and India, 11,658.) There is also a considerable level of regional flow of students. Singapore, the Philippines, Taiwan, Jordan, Senegal, and Nigeria also receive students from their respective regions.

Scholarships, awards, and fellowships for manpower development were also granted by international donor agencies,[11] philanthropic foundations, and quasi-public educational establishments.[12] In addition, a host of multinational agencies, nongovernmental development agencies, professional associations, consulting firms, and chambers of commerce sent their local employees and others from developing countries for overseas training.

The World Bank, for example, is one of the major sponsors of overseas studies. Its higher education lending has been targeted for high priority specialized fields such as agriculture and engineering and for direct productive manpower. The bank's total lending for science and technology based in higher education and tertiary institutions amounted to $6158.4 million from 1970 to 1990 (see Table 1). All of its 32 projects had an overseas graduate studies component for students and staff, and a few funded undergraduate training.[13] Of the 32 projects, 19 projects were in Asia, 4 were in Africa, 7 were in the Middle East, and 2 were in Latin America[14] (see Table 2).

These national and donor-assisted programs, combined with a relatively open admission policy in the English-speaking developed countries until the late 1970s, made it possible for a large number of students from developing countries to attend universities overseas.

Types of Overseas Education Programs

Overseas higher education training can be broadly classified under five categories, each serving a specific manpower need within the overall demand of a human resource base:

- scholarships, fellowships, and grants for undergraduate and graduate studies at overseas universities and for postgraduate work for faculty members, researchers, government officials, and professionals in quasi-government bodies and the private sector;
- on-the-job training attachments by government officials and professionals from commerce and industry;

Table 1
Bank Support of Science and Technology Projects for Higher Education, by 5-Year Segments

Fiscal Year	Number of of Projects	Total (M, U.S. $)	%	Loan (M, U.S. $)	%
1970–74	4	197.5	3.2	78.1	3.6
1975–79	3	170.4	2.8	93.4	4.3
1980–84	6	2,129.5	34.6	637.4	29.5
1985–89	12	2,871.3	46.6	842.7	39.0
1990–91	7	789.7	12.8	511	23.6
Total	**32**	**6,158.4**	**100.0**	**2,162.6**	**100.0**

Source: Joshua A. Muskin, *World Bank Lending for Science and Technology: General Operational Review*, p. 2. World Bank, 1992.

- short-term courses for professional enhancement sponsored by the public and private sectors for administrators in government, business and industry;
- split-campus or twinning model, through which a local institution conducts the first one or two years of studies, and an overseas institution supervises the final part of the research program. Thus the student will benefit from grounding his or her research in his or her home base as well as from the advice of a team of foreign experts.

The above categories account for about 20 percent of overseas students. However, by far the largest category is privately financing, which accounts for about 80 percent of the nearly 1.2 million overseas students.

From 1960 to 1980, the total pool of overseas students worldwide increased by an average of 20 percent per year, from 245,000 in 1960, to 502,000 in 1970, to 977,800 in 1980.[15] The current worldwide rate of increase is 14 percent.[16] About 70 percent of the world's overseas students are from the developing countries.[17] The public and private American universities and colleges are host to 385,851 of the world's overseas students,[18] and this overseas student enrollment accounts for only about 3 percent of the estimated total of 12.5 million students in American universities and colleges in 1989. Asian students constitute over half of all foreign students in the United States.[19] France was the next big receiver of overseas students with 125,574 in 1988, and half of these students are from the Francophone African countries.

A very high proportion of political, professional, academic, and administrative elite in the developing countries were educated abroad. For example, 36 percent of the world's heads of government or state in 1984 received part or all of their education abroad, and by far the largest number of them studied in the United Kingdom.[20] Many prominent business and financial leaders from developing countries have had their training in the graduate business schools of Harvard, MIT, Stanford, London, and Manchester.

The late 1960s and early 1970s witnessed a gradual change in the priorities of external aid agencies. This was further compounded by the world economic recession caused by the oil crisis of the early 1970s. Policy shifted away from training and toward an emphasis on capital assistance in the form of physical infrastructure. Donor assistance in the latter half of the 1970s turned to issues of food aid for the improvement of the health and welfare of the poorest of the poor. Simultaneously, overall assistance for international higher education waned.[21]

> During the period 1952 to 1980 USAID allocated roughly $1 billion to the development of 117 Third World universities, some being supported very extensively, some marginally. The peak year was 1965, in which 74 universities in 31 countries were being aided through

> contracts with 72 U.S. universities for a total cost of $122 million in that year alone .... By 1970 the number of universities in AID programs had declined to 66, by 1974 to 18 and by 1978 to only 10.[22]

However, this did not deter the continuous rise in overseas higher education. The rapid increase of career-oriented, privately financed students not only helped to sustain their numbers but to boost them. By the 1980s, donor assistance eventually made a full circle—shifting away from capital assistance back to technical skills and human resource development:

> The 1980s ushered in a period where the focus moved again from an emphasis on infrastructure to an emphasis on people. The main points causing this shift in attitude were an increased awareness of the complexities of economic growth, the interdependence of the world economy, and the limitations of knowledge to tackle some of the new development problems. Thus, once again, donor agencies have been forced to address the issues of Human Resource Development, particularly as they relate to the problems of technology adaptation, economic development and trade, and management for change.[23]

The Contribution of Overseas Education

Although the various schemes that initiated overseas higher education lacked an overall strategy and coherence, the scale and contribution of overseas higher education have been significant to developing countries. Through overseas higher education, many developing countries were able to overcome, to some extent, the critical shortage of high-level manpower.

It is estimated that, from 1949 to 1979, more than two million students from developing countries studied in the various public and private universities and community colleges in the United States. The majority of them studied science and engineering, although there were others who enrolled in social science, education, business, and public administration. The number of doctoral degrees earned in the United States by overseas students increased from 1,176 in 1960 to 8,195 in 1989.[24] As a result, there emerged in most developing countries a core of overseas-trained agriculturalists, economists, educators, engineers, and physicians with Western credentials.[25] They occupied key positions in the public sector—such as government ministries, universities, and research institutes—and in the private sector. They also attracted other young and talented school leavers to follow in their footsteps. Edward

Table 2
Bank Support of Science and Technology Projects for Higher Education by Region

Region	Number of Projects	Total (M, U.S. $)	%	Loan (M, U.S. $)	%
Asia	19	5,044.8	81.9	1,623.8	75.1
Asia less Korea, Indonesia, and China	(4)	(127.5)	(2.1)	(54.4)	(3.0)
Africa	4	100.6	1.6	78.0	3.6
EMENA	7	498.1	8.1	238.8	11.0
Latin America	2	515.4	8.4	222.0	10.3
Total	**32**	**6,158.9**	**100.0**	**2,162.6**	**86.7**

Source: Joshua A. Muskin, *World Bank Lending for Science and Technology: General Operational Review,* p. 7. World Bank, 1992
EMENA = Europe, Middle East, and Northern Africa

Teller, in a 1987 study, observed:

> Today's scientists are actually in control of one nation. In Taiwan, approximately one half of the highest government offices are held by experts in the natural sciences. Most of them are American-educated chemists, mathematicians, engineers, or physicists. They have helped to improve the living standards on a small, resource-poor island.[26]

These highly trained overseas technocrats have been playing a dominant role in policy formulation, planning, and implementation of development strategies for economic growth.

In the main, their contributions can be broadly classified into two areas: (1) development of national higher educational institutions; and (2) transfer of technology. Together, they have the cumulative effect of building technological capability in the developing world.

Development of National Higher Education Institutions

In higher education development, the predominantly overseas-trained academics and administrators have not only helped to minimize the reliance on expatriate academics, but have also contributed to the rapid expansion and indigenization of higher education institutions. For example, by 1977–1978, almost half the academic positions of the University of East Africa were held by Africans.[27] This was also the case in most African countries by the late 1970s. Nigeria is an outstanding example; nearly 80 percent of the faculty positions were filled by Africans.[28] This Africanization of the academic staff was possible because of overseas training.[29]

Overseas-trained academics have made significant contributions to the planning and establishment of universities, faculties, colleges, and research institutions. The testimony to this is the establishment of notable research and teaching institutes all over the world.[30] For example, in Nigeria from 1960 to 1980, largely overseas-trained academics and administrators planned and established 13 universities with a total enrollment of nearly 70,000 students. During this period, the growth in numbers of Nigerian academic staff was impressive, from 248 to 7,200.[31]

Transfer of Technology

Accompanying the growth of overseas-trained personnel has been a dissemination and transfer of a great mass of knowledge, including technical scientific knowledge and technology transfer. This has led to the development of a critical mass of indigenous scientific manpower, most notably in Brazil, Mexico, India, South Korea, Thailand, Malaysia, Taiwan, and Singapore.

In the NICs, highly trained scientists, on their return from overseas training and work experience, provide critically needed intellectual leadership. Since the 1980s, both South Korea and Taiwan have been actively using a series of incentives to entice the return of their overseas-trained technical personnel. For example, the ministry of education in Taiwan established a special fund to assist universities to attract overseas-trained Chinese scholars to take up positions in Taiwan's institutions.[32] These returnees are agents of technology transfer and improvement, especially when they put their knowledge at the service of industry. Analysts predict that Taiwan will become a leading developer and producer of semi-conductors.[33] An advanced science and technology base coupled with high skills has given South Korea and Taiwan a competitive edge in an increasingly market-driven and technology- oriented world economy.

Overseas-trained scientists and engineers at the Indian Institute of Technology have contributed to the development of Indian rocket technology. Similarly, at the Rubber Research Institute (RRI) of Malaysia, overseas-trained scientists have made the production of natural rubber very cost-effective and have facilitated the greater utilization of natural rubber in new products. They have contributed to the sustainability of the Malaysian natural rubber industry.

The development of scientific and technology enclaves in countries like India, Brazil, Mexico, Thailand, and Singapore is made possible by maintaining close personal contacts between overseas-trained scientists and leading researchers in the west. In some cases, scientists have developed collaborative research programs with western research centers. For example, Mahidol University in Thailand has collaborated with the department of biochemistry at the University of California, San Francisco, in the development of a bacteria

that inhibits the reproduction of the malaria-carrying anopheline mosquito. This form of collaborative research program has strengthened the technological capacity of developing countries and has helped to integrate the indigenous scientific community into the wider international community.

Many universities and research institutions staffed by overseas-trained graduates in developing countries have played a central role in solving local problems and have contributed to human resource development in their respective countries.

Since the mid-1970s, linkages between universities in the developing and industrialized worlds have given particular attention to developing relevant staff-training programs. For example, the flexible British split-site Ph.D training program encourages students from developing countries to engage in research in British universities on topics relevant to their countries' needs. Researchers-in-training divide their time between the United Kingdom and their home countries in order to benefit from both the expertise of British researchers and from keeping in touch with conditions at home.[34] This form of split-site training helps researchers-in-training continue their research after their return home and maintain access to new, rapidly developing knowledge in their fields.

Similar linkages have been established between American and developing country universities; for example, the University of Minnesota and the Moroccan School of Agriculture.

The Pitfalls of Overseas Education

While overseas higher education has undeniably made significant contributions to developing countries, serious concerns have been raised regarding its relevance, its impact on the indigenous culture, and the problem of the brain drain.

Relevance of Overseas Education

Overseas-educated professionals bring home Western concepts that transform their work situations and cultural perspectives.[35] For countries whose national economies are dependent on international transactions, like Hong Kong and Singapore, a western overseas education is not irrelevant.[36] However, for countries in South Asia, sub-Saharan Africa, Latin America, and the Middle East, the relevance of western perspectives has been questioned.

Overseas undergraduate and graduate education is credential-oriented; formal qualifications will open job market doors.[37] As western university curricula are designed to serve the needs of advanced industrial societies, they naturally steer Third World students towards the western mind set, paradigms, and professional expectations.[38] As Barbara Burns points out:

> In terms of content, . . . a subject or discipline can no longer be understood if it focuses only on the U.S. (Western) experience. Almost no discipline is "culture free," therefore, excluding the experience of other cultures from the teaching of a discipline that has a cultural context short changes the student and reflects an ill-advised chauvinism.[39]

The Vice-Chancellor of the University of Mauritius, Professor J. Manrakhan, calls this "mutual brain washing," that is, developing-country academics, after their return, introduce curricula and recommend textbooks based on their Western experience, irrespective of their relevance to their country's or region's environment and needs.[40] Some examples are as follows.

In the early 1980s, an instructional development specialist in Hong Kong, during her visit to a tertiary level banking course, found that the instructor was teaching the American banking system without reference to Hong Kong. The reason given by the U.S.-trained instructor was that he did not know much about the Hong Kong banking system and that there was no textbook on it, even though Hong Kong is a major financial center in the Pacific Rim!

A recent study points out that, in a number of universities in sub-Saharan Africa, the curricula are inherited from western models and thus are not geared to solving the problems of the 1990s.[41] In addition, western models of institutional arrangements and professional and academic norms conform more to the systems prevailing in industrialized countries, and do not have a built-in mechanism for regular review and curricular change in response to the needs of the labor market. Thus, the dominant western model has indirectly hampered the building of innovative and sustainable indigenous institutions.

The usually significant qualitative difference between local and overseas training has led to the development of two cultures—the overseas-trained elite and the home-educated graduates. The former is usually perceived as being more cosmopolitan. As Thomas Eisemon points out: " . . . the foreign educated are envied, valued for their training and supposed possession of special skills. The cosmopolitanism of the foreign educated is admired. To have been abroad is thought something to be proud of, to immediately boast about."[42]

Cosmopolitans and locals generally show not only a divergence in their status and prestige, but also in their thoughts, perceptions, and solutions to human and social problems. The overseas-educated, particularly those who have had their training in the elite western universities, occupy the key and senior positions in public and professional bodies: institutions of higher education, research centers, and multinational corporations operating within their countries. In Indonesia, Berkeley-educated economists have wielded a dominant influence in the country's economic planning process since the military coup of the late 1960s. Power and Gertzel point out that "education overseas, with its emphasis upon the individual, has reinforced the elitism that bedevils most underdeveloped countries."[43]

In developed countries, a Ph.D student in science and technology undergoes a narrow and intense specialization in line with his or her supervisor's research interest.[44] On completion, most developing country scientists continue to pursue an academic or research career, through which they hope to continue to work in the subspecialty of their thesis topic—because of peer pressure and recognition.[45] However, most of them, on their return home, find their training is a mismatch. For example, Eisemon points out:

> A consequence of the foreign training and other assistance that has been provided to Indian engineering education may be reliance on the international engineering community for stimulation and recognition. What obtains professional acclaim from abroad often has no local relevance. The sophisticated technology of developed countries is not necessarily appropriate for Indian conditions.[46]

Developing countries cannot afford the resources to provide the requisite scientific infrastructure to facilitate the continuation of highly specialized, narrow-field research work by their nationals. This mismatch has contributed to the frustration and alienation of overseas-trained scientists in their immediate and national environment. It has forced many of them to emigrate.

The Brain Drain

Overseas higher education has also given rise to a brain drain. In many countries, qualified overseas-trained returnees emigrate after working at home for various reasons. Many do not even return home after completing their studies in industrialized countries. The salaries in industrialized countries and the opportunity to utilize the skills acquired overseas often entice the most competitive of foreign students to stay in their host countries. The brain drain of the most gifted and most highly qualified is a real dilemma; the critical depletion of the small net stock of vital human resources hampers the social and economic development of developing countries. As Erwin Epstein and Wei-fan Kuo point out:

> Modernization depends on advanced knowledge gained overseas in fields in which domestic institutions display weakness; yet those individuals who go abroad to gain knowledge often find economic conditions and opportunities for advancement more favorable in their new environment, and, consequently, they decide not to return.[47]

Critical resource constraints and low-level science and technology capacity have made it difficult for overseas-trained scientists and professionals to build a sustainable and relevant indigenous institutional capacity in science and technology. This has placed developing countries in a persistent technology dependence.[48] As a result many developing-country scientists and technologists, trained at very high public cost by their countries in the advanced countries, emigrate to the West where they often excel in their work. From a recent Philippines study:

> The precious few natural scientists we have, most of them trained aboard, are being siphoned off either as academics in foreign countries (usually the leading U.S., Canadian, and recently even Japanese universities invite our outstanding scholars to work for them) or as administrators of world organizations such as UNESCO and U.N. related international bodies, mostly in Asia.[49]

The United Nations Conference on Trade and Development (UNCTAD) points out that, between 1961 and 1970, the brain drain has accounted for a flow of 300,000 scholars to the United States, Canada, and the United Kingdom, with a further 100,000 scholars emigrating to continental Europe between 1961 and 1970.[50] In a recent (1989) study on India, the Center for Research, Planning and Action, New Delhi, states that in 1985 a quarter of the domestic stock of India's physicians and surgeons were working abroad, as were 10 percent of India's engineers.[51] D.N. Misra, the advisor to the Department of Scientific and Industrial Research of India, has written:

> The gain to the receiving is, of course, much greater than the loss to India . . . for it would cost in US dollars, for example, nearly US $50,000 to train a graduate engineer and nearly US $80,000 to train a medical graduate, taking into consideration only the education cost. To this must be added the gain to the economy of the receiving country accruing as a result of work done in that country by the expatriate Indians. It can safely be stated that India has repaid through the export of human expertise much more than the total aid it has received from abroad.[52]

The structure of the labor market and its absorptive capacity in almost all developing countries has dramatically changed in the last two decades. However, the structural rigidities in the higher education system in many developing countries has exacerbated an imbalance between supply and demand for high-level manpower. The overall demand for humanities and social science graduates in the public and private sectors has declined, while the demand for scientific and technology graduates remains high. This has given rise to growing unemployment among graduates in a number of developing countries.[53] The result is a growing brain overflow, that is, students who cannot find employment at home stay on in their host country or go to a third country to work. This has, to some extent, relieved countries like Egypt, the Philippines, India, Jordan, Sri Lanka, Bangladesh, and Pakistan, who have an excess supply of graduates in certain fields.

The growing vacuum in the supply of physical scientists and engineers in the technologically advanced western nations implies a further brain drain from developing countries. For example, by the year 2000, the United States is expected to produce 12,000 Ph.Ds a year, 5,000 of whom will be from other countries.[54] However, the projected need in the United States is for 18,000 Ph.Ds per year. Even if the United States retains its overseas students, the United States will still have a shortfall of 6,000. Canada and the United Kingdom are in similar situations. This is due to the fact that many developing countries have "education systems which are too geared to Western needs and educating their most able students abroad"[55] and to the failure of the science and engineering education programs in many industrialized countries.

Some of the pertinent issues raised on the brain drain have been studied and documented in various reports and scholarly publications.[56] Various policy attempts by both host and sending countries to reverse the flow of brain drain have been pursued. The U.S. Congress in October 1976, through the introduction of Public Law 94-484, significantly restricted the entry of foreign medical graduates into the United States.[57] However, there is question as to whether this was a genuine attempt to help developing countries retain their best medical talents or instead was intended to protect the American medical fraternity, since there was no longer an insufficient number of physicians and surgeons in the United States.[58] Australia, Canada, the United States,[59] and the United Kingdom impose immigration restrictions on overseas students, requiring them on completion of their studies to return to their home country for a minimum period of two years before they emigrate.

In spite of these measures, brain drain poses considerable problems to developing countries. The Taiwanese government estimated that more than 86 percent of Taiwanese students who went overseas for advanced training from 1950–1983 did not return.[60] However, with the growing economic prosperity and greater democratization of Taiwan, their rate of return has increased. Currently 75 percent do not return.[61] China faces a similar experience. Partial government figures indicate that, of the 200,000 students that have gone overseas for studies, fewer than one-fourth have returned. The human resource flows from developing countries to industrialized countries, the ineffective utilization of overseas-trained graduates in many countries, their shortage in critical areas, and their implications on development have to be examined in greater detail.

Impediments to Indigenous Academic Quality and Human Resource Development

One of the growing concerns about overseas education is that this outflow of the most talented has undermined the overall quality of students enrolled in local universities in developing countries. For example, the dean of the faculty of economics and public administration at the University of Malaysia pointed out in 1988 that, since the top school leavers are sent by the government for overseas studies, only the less able are admitted to the local universities.[62] In the Pacific, the Australian scholarship scheme, whereby bright students from the island states attend schools and higher education institutions in Australia, creates a similar problem for the regional University of the South Pacific.

The emigration to the West of a good number of high-quality, overseas-educated scholars for academic, economic, or political reasons further depletes the limited talent pool. The brain drain thus undermines the growth of a critical mass of indigenous scientific and technological manpower and hence impedes intellectual, social, and economic progress. In Africa in particular, the economic crisis reinforces the crisis in human resources, creating a vicious cycle.[63]

A Strategy For Developing High-Level Human Resource Bases

The mixed and differential impact of overseas higher education on countries defies a judgement on its universal applicability. Evaluation must be made on a country-by-country basis. To meet the challenge of international competition, countries need to pay special attention to three areas when they develop their high-level human resource base: (1) technological relevance; (2) specifically-designed training; and (3) national capacity building.

Technological Relevance

In the past, there have been calls in the United States for the support of targeted summer courses and relevant dissertation research for foreign students, so that they could learn to apply science and technology for the development of their home countries. The calls have generally gone unheeded.[64] Therefore, developed-country institutions should give serious consideration to encouraging overseas students to adapt their studies to suit their countries' situations, over and above training them in fields of specialization.

Basic research in any scientific field is extraordinarily expensive, and advanced industrialized countries are already in the lead. Developing countries, therefore, are well advised to use their scarce resources for the adaptation and improvement of existing technology, particularly for productive application. The success of Japanese industry in improving American technology attests to the importance of making strategic use of resources for technology enhancement. Developing countries can use their own comparative advantage to solve problems and advance knowledge in agriculture, health, environment, energy, and industry.

Specifically Designed Training

For many developing countries, overseas education as only a slot in a regular undergraduate or graduate program is becoming less attractive.[65] There is a growing recognition of the need to provide an all-rounded education through a mixed training cycle. This entails designing programs to fit the country's and student's specific needs, with a mix of formal education, recurrent on-the-job training, and professional exchange.

National Capacity Building

No country can escape the need to build up its national education, research, and development capacity to train middle- and high-level manpower to select, use, and improve technology and to solve social and economic problems. The NICs have become relatively self-sufficient in undergraduate and postgraduate training in applied scientific fields. However, many African and some South and Southeast Asian countries continue to send a large number of students to the industrialized countries. In 1990, Kenya sent 9,000 students overseas—up from 7,000 in 1980. This is a significant number when compared to the 40,000 students enrolled in Kenya's six national universities and university colleges.[66] Similar situations prevail for Malaysia and Saudi Arabia.

The key to capacity building is local or regional training. Training within a culture or region should help enhance the commitment of students in tackling local developmental issues. There is a correlation between

a university's contribution to the advancement of knowledge and the institutionalization of relevant undergraduate and graduate education within it. Moreover, research work is closely linked to graduate training. The strengthening of graduate education within developing country universities is therefore crucial to the emergence of a relevant educational capacity. This does not mean a voluntary "de-linking" from the rest of the world or self-imposed isolation.

The crucial issue for all these countries is the relevance of training to their labor market needs and to their national, scientific, and industrial priorities. National capacity building has to be selective and confined to areas in which a country has a viable niche and has a comparative advantage. For example, Malaysia has a long tradition and strength in natural rubber research relevant to its rubber industry. Mauritius has a similar advantage related to the sugar industry. In areas where countries lack a capacity, there is a compelling case for overseas study. It is only through national and international linkages that developing countries can acquire the expertise needed to keep up with the rapidly moving frontiers of knowledge as well as be development-oriented and competitive.

Conclusion

The critical path to alleviating poverty, improving productivity, and participating in world trade relies on the development of human resources. While providing basic education is within the reach of many developing countries, providing higher education is difficult to achieve without acquiring the knowledge and technology of the advanced industrialized countries. Overseas education is an expedient way of tapping the expertise not available within many developing countries and of meeting the needs for middle- and high-level technical and managerial manpower for development.

Overseas education certainly has contributed to the development of higher educational institutions and to technology transfer in developing countries. At the same time, overseas learning may not be relevant to the home country; it also exacerbates the brain drain, which undermines indigenous academic quality and human resource development. Given the financial and institutional constraints, developing countries are well advised to ensure that overseas education is relevant and specifically designed and that their national higher education systems are strengthened.

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Chapter 5

Human Resources and Technological Development

Robert E. Evenson

The discovery and development of improved technology requires specialized human skills. For a developing country, these skills may be hired or purchased through contracts with expatriates, acquired abroad through overseas graduate training programs, or produced domestically. The particular combination of skill acquisition that is optimal will depend on the field of technology and on the stage of development, that is, on past investments in institutions and in the capacity to produce such skills domestically. Technology itself (as indexed by inventions) may also be imported from overseas in various forms and through various contractual arrangements.[1]

The field of technology is relevant to policy decisions regarding technology importation, skill purchase from expatriates, skill acquisition from overseas and domestic skill production because the inherent scope for importation or technology spill-in varies greatly by field of technology. The polar cases in this regard are represented by many improved agricultural crop varieties where there is low spill-in and by certain industrial chemicals where spill-in is high. Varieties of maize, for example, are highly location-specific in that their performance is impaired when they are moved from one soil–climate region to another. Accordingly, the scope for direct importation of maize varieties by developing countries is practically nil.

The performance of many industrial chemicals, on the other hand, is generally not highly dependent on soil and climate factors and is also usually independent of economics factors. For newly invented chemicals of this type, the import or spill-in potential is high. Most technology fields, however, fall between these polar cases, and this fact calls for complex policy measures that only a few countries have managed to pursue effectively. Most countries in the world, at varying stages of development, have managed to pursue efficient policies for the polar cases. For agricultural technology, National Agricultural Research Systems (NARSs) have been built in most regions in most countries in recognition that spill-in potential from abroad is low. A system of International Agricultural Research Centers (IARCs) has also been built to support the NARSs and to provide germ plasm to them. In contrast, few developing countries have developed industrial research programs to produce technology in fields where spill-in potential is high, but they do seek to import such technology on the best possible terms.[2]

For intermediate cases where spill-in potential is neither very low nor very high, few developing countries have managed effective programs. Only the select few newly industrializing countries (NICs) have done so.[3] The failure of most countries to propel themselves on the road to NIC development is largely a failure to develop the indigenous research and development or inventive capacity to imitate foreign technology for these intermediate cases.

In this essay, the demand for international or overseas

human resource training is analyzed in the context of international technology flows. Section I discusses the relationships between science and invention and imitative and adaptive invention. Section II reports measures of inherent spill-in by field of technology. Section III attempts to integrate Sections I and II to derive efficient strategies for countries at different stages of development for different technology fields. International training needs or demands are discussed. Section IV discusses actual investments in science and applied research and development in developing countries and discusses two case studies: agricultural scientists in Pakistan and inventors in India. Section V discusses implications for future demands for international education in this context.

I. Science: Invention and Imitation

Early analyses of technology for developing countries were based on two simple propositions or models: (1) the linear science–invention model, and (2) the international product cycle model.

The basic idea inherent in the linear science–invention model was that scientific discoveries beget inventions.[4] The basic idea in the product cycle was that inventions beget imitations and adaptations.[5]

These two simple concepts suggested that invented technology would originate in a few advanced countries with advanced scientific systems and then spill-in to developing countries, producing catch-up growth. Developing countries would not be required to invest in advanced scientific research or in high-level applied research to be part of the international product cycle. The technology transfer of multinational firms and a modest capacity for screening technology and making adaptive modifications of more advanced technology were all that was required by this view. The most serious barrier to this process was seen to be unreasonably high prices or terms by which developing countries obtained technology from advanced countries.

It is now obvious that this relatively easy process of catch-up growth has not occurred for most developing countries. Two fundamental challenges to these simple models have been made. The first is a challenge to the linear model. This challenge essentially holds that necessity, not science, is the mother of invention. Studies tracing the origin of inventions usually have difficulty identifying a scientific discovery as the originating factor. More often, inventions originate in necessity—a problem needs to be solved or there is a demand-induced effort to invent new technologies.[6] Thus a simple cascading effect, by which scientific discoveries stimulate invention sequences, does not appear to hold for most inventions. This does not mean, however, that science is not important to invention, because an understanding of science is a determinant of invention potential. This is particularly true for the pretechnology sciences (see below).

A second challenge to the international product cycle is that a considerable amount of invented technology has low inherent transferability or spill-in potential. The clearest case is for agricultural technology. The performance of crop varieties—and even animals—is contingent on soil, temperature, humidity, rainfall, and day length. Modern plant breeders have only partially modified the Darwinian evolutionary process, by which plants and animals evolved into highly differential types suited to small ecological niches. For most crops, these ecological interactions are sufficiently strong so that the international product cycle process clearly does not work. Maize varieties suited to northern Iowa are of no value in southern Iowa and surely are not transferable to India or the Philippines. Southern Iowa or Alabama did not have improved maize varieties until public- and private-sector research programs targeted to these areas were developed. And agricultural policy makers in the 1950s and 1960s recognized that India or the Philippines would not have improved maize varieties until research programs located in and targeted to regions in these countries were built.[7]

The combination of widespread recognition of this limited spill-in potential and the tradition of designing and building public sector NARSs has led to relatively effective and efficient technology-producing organizations and institutions for agriculture. The IARCs system supports the NARSs by providing original pioneering inventions that can be imitated or adapted by NARSs, because the IARCs are located in the tropics and subtropics. The resultant system is depicted in Figure 1.

Human skill levels range from farmer skills (level 1) through general science skills (level 7). Agricultural policy makers have recognized that when technology is

Figure 1:
Human Capital Dimensions of Technology Production and Diffusion

				SPECIALISTS			
Skills Level	**Description**	**Farmers**	**Extension Workers**	**Applied OF-FS Researchers**	**Basic Agricultural Scientists**	**Agricultural Scientists**	**General Scientists**
7	General Science					x	xxx
6	Pre-invention Germ plasm				x	xxx	x
5	Technology Invention			x	xxx	x	
4	Sub-invention	x	x	xxx	xx		
3	Information Communication	xx	xxx	xx	x		
2	Technology Choice Decision	xxx	x	x			
1	Farm Management Decision	xxx	x				

Key: x = limited relevance; xx = moderate relevance; xxx = high relevance

highly location specific, extension and communication systems must be localized. Subinvention must be quite location specific in NARSs and regional research stations, and invention level 5 must also take place in the NARSs, although some is undertaken in the IARCs. Pretechnology germ plasm (science level 6) is critical to the maintenance of invention and imitation potential. It takes place in the stronger NARSs and in the IARCs. Most of this capacity must be in the geo-climate regions of developing countries to be effective. Some of this is institutionalized in developed countries' universities and research centers. Developed countries also produce most of the relevant general science.

This complex structure of research and extension institutions has evolved over the past century. Experiment station designs have enabled relatively efficient research conduct in many settings. Developing countries have utilized international education for three purposes: First, international graduate training (and expatriates) have been used to build research capacity and training capacity; second, there has been some use of international education for maintaining and rebuilding; and third, there has been some recognition of the use of international education as a germ-plasm conduit, where scientists trained in developing countries bring pre-invention germ plasm to developing countries' NARSs.[8]

Unfortunately one does not find comparable research and extension institutions for industrial technology. For technology such as the industrial chemicals, noted in the introduction, the simple product cycle model may be reasonably appropriate. The high degree of spill-in of these inventions means that imitation or adaptation potential is low. Developing countries in these cases need screening and bargaining capacity. Much of this type of technology may be imported via multinational corporations and technology-purchase contracts, often with expatriate technicians.

Yet much industrial technology is also subject to spill-in inhibitions. This is because it may be either ecology-inhibited or linked to ecology-inhibited technology (e.g., agricultural implements), or it is economy inhibited. Economy-inhibited technology is illustrated by labor-saving inventions developed in high-wage economies. These inventions are often of little value in low-wage economies (e.g., improved rice harvesters are valuable in Japan but of little or no value in Bangladesh).

Efficient systems of research and development (and extension) for industrial technology in developing countries thus call for building considerable domestic capacity. This is partly for the same reasons that such capacity is required for agriculture. In addition, however, a considerable research and development capacity is required to screen and buy technology that is not ecology or economy inhibited. As will be noted below, most developing countries have not built such capacity. This appears to be because: (a) simple models for research and development conduct such as the agricultural experiment stations are not as readily available; (b) industrial technology is not seen as a public activity in many countries and will not be conducted unless private-sector incentives that are complex and sophisticated are in place; and (c) policy makers fail to appreciate the extent to which imitation potential exists and thus concentrate on terms of transfer. This latter tendency has been exacerbated by international agencies, particularly the United Nations (U.N.) agencies where terms of transfer have dominated policy debates to the relative neglect of domestic capacity development.

In recent years, this debate has changed character, but it remains a debate over terms rather than domestic capacity. In the 1960s and 1970s, the developing countries that led the debate (the North–South debate) argued for better terms for technology impacts. Since the mid–1980s, the United States and other developed countries have pursued a campaign to achieve stronger intellectual property rights (IPRs) protecting U.S. and Organization for Economic Cooperation and Development (OECD) inventions in developing countries. The list of offending countries, as perceived by the U.S. State Department, almost parallels the list of successful developing countries (i.e., the NICs).[9]

The phenomenon of IPR "piracy" is complex and only partly related to technology, since only inventions subject to patent law are forms of technology. Trademark and copyright laws protect marks and designs, and these usually are not types of technology. Reviews of patent systems show that the poorest developing countries have virtually no effective IPR systems.[10] Middle-income developing countries generally have weak protection. NICs usually start their "NIChood" period with weak protection and do not strengthen their IPR systems until late in the that period.

I have argued elsewhere that the reason the poorer, relatively unsuccessful developing countries are not charged with piracy is that they have not developed a capacity to pirate.[11] They sometimes build effective agricultural research systems, and they engage in contracting for technology from developed countries. They usually contract in large turn-key type projects where IPR protection is not highly relevant. When they do develop some technological capacity, they begin to screen technology more carefully and purchase it in decoupled form. Conflicts over terms of transfer now emerge, and many middle-income countries begin to develop a capacity to engage in some domestic, adaptive invention.

Advanced middle-income countries with substantial capacity to invent and develop manufacturing processes and products have tended to fall into two camps. One camp, with India being a key case, has pursued a strategy of technology import substitution by actively discouraging the purchase of foreign technology in the hope of encouraging domestic invention. Technology contracts are screened by a costly bureaucracy; multinational corporations are discouraged. Strong IPRs are seen as causing unwarranted payments to foreigners for invention rights. These economies have generally pursued "closed economy" policies. The end result of this constellation of policies is that little technology is imported. Domestic invention is usually not stimulated because of weak IPRs. These countries lose the ability to import and imitate that characterizes the more successful NICs.

The second group of countries in this regard are the NICs. They have maintained "open economy" policies and, in particular, have sought to import technology in large volumes at low cost. They have developed excellent reverse engineering capacities to screen and copy technology. They have usually used a combination of incentive structures to encourage research and development and the building of domestic research and development capacity closely attuned to relevant industrial technology. Strong IPRs present a dilemma to them because they have the skills to copy technology (and therefore to violate international IPR conventions). Stronger IPRs would force them to pay more for imports, but would also force them to imitate sooner.

By the end of the NIChood period, these countries are in the import and imitate mold. They strengthen IPRs

to stimulate imitation and to protect newly developed seller's rights as their domestic capacity matures to the point where these inventions have markets abroad.

Table 1 provides an overview of several indicators supporting this characterization. These data show:

1. That the NICs are actually closer to the semi-industrialized (or stagnant) developing countries in expenditure ratios for basic science and industrial research and development than they are to industrialized countries. (Note, however, that South Korea is now comparable to industrialized countries as it exits its NIChood period.)
2. That agricultural research and extension expenditure ratios are more evenly distributed over country types than is the case for industrial research and development.
3. That all countries are substantial technology importers, with NICs expending more than the semi-industrialized countries for imports.
4. That technology exports do not become significant until the end of the NIChood period. (Thus the

Table 1
Comparative Indicators by Country Type

	COUNTRY TYPE				
	Industrialized	Newly Industrialized	Semi-Industrialized	Middle-income Developing	Planned
1. RATIO: INVESTMENT TO GDP					
Basic Science					
1986	.40	.15	.08	.05	na
Industries (R&D)					
1985	2.15	.50	.40	.25	3.10
1971	2.27	.56	.31	.15	2.61
Agricultural Research					
1980	1.50	.73	.81	.50	.73
1970	1.37	.54	.57	.27	.75
Agricultural Extension					
1980	.62	.59	.92	.44	.33
1970	.57	.51	1.01	.43	.33
Technology Impact					
1984	.95	.67	.53	.75	.08
1970	.67	.66	.37	.45	.27
Technology Capacity					
1984	1.23	.08	.06	.02	.10
1970	1.95	.04	.02	.01	.13
2. PATENT RATIOS					
Domestic Inventions, 1983	.27	.20	.12	.13	na
To Total, 1970	.53	.25	.17	.11	.70
Invention Abroad, 1983	1.71	.47	.17	.10	.10
To Domestic, 1970	1.79	.28	.10	.10	.15
Domestic Inventions, 1979	.20	.55	.15	.05	.24
To Domestic Science and Engineers, 1971	.26	.88	.34	.07	.22

pirating nations do not have seller's rights to protect.)

5. That high levels of imported inventions (i.e., patents granted to foreigners) characterize all countries.
6. That invention abroad is primarily done by industrialized economies.
7. That inventor productivity (inventions per scientist and engineer engaged in research and development) is highest in the NICs and lowest in middle-income developing countries.

II. Evidence for Spill-in Potential

Spill-in potential from country A to country B can be defined as the degree to which invented technology targeted to or invented for country A is also valuable in country B. One index of this value is the proportion of inventions granted patents in country A that are deemed by the inventor to be worth patenting in country B (at a significant cost). If spill-in potential is high, this index will be high.

Table 2 reports tabulations of patents granted for agricultural inventions in seven countries for the 1975–1980 period, and indicates the priority or originating country. In the first panel, it is shown that U.S. inventors obtained 3,316 patents; 470 of these also obtained protection in the United Kingdom, 287 in France, etc. Inspection of the panels shows that agricultural chemicals inventions are more transferable (i.e., have more spill-in potential) than are harvesting machinery or post-harvest technology inventions for fruits. This can be seen by comparing the proportion of off-diagonal elements to diagonal elements in these matrices. This comparison further shows that fertilizer inventions are highly transferable, as are modern biotechnology inventions.[12]

These matrices also show that Brazil has the lowest proportion of inventions obtained abroad. This is typical for advanced developing countries. Brazil has the capacity to buy and imitate (or copy and imitate). Most of its imitated inventions stay at home because they are not competitive with the imitated originals.

Table 3 reports a more general set of tabulations showing two types of invention spillover. The first type is the spill-in indexes by industry. These indexes are essentially the ratio of total inventions to priority inventions in the home country for eight countries (Canada, Belgium, France, Germany, United Kingdom, Netherlands, Switzerland, and the United States) for the 1969–1987 period. (Thus, this is the ratio of all elements to the diagonal elements as shown in Table 2.)

A recent research project at Yale (the Yale–Canada Concordance project)[13] enables the assignment of patented inventions to industries of manufacture and industries of use. The second indicator of spill-in is thus from industries of manufacture to industries of use. This spill-in can be assessed by comparing the number of original inventions for each industry.

Consider first the international spill-in indexes. The lowest indexes for manufacturing industries are found for:

Wood and furniture

Ships

Other transport

Aerospace

Fabricated metals

Paper and printing

Other manufacturing

The highest indexes of transfer for manufacturing industries are:

Chemicals

Drugs

Nonferrous metals

For industries of use the pattern is similar, except that inventions used in paper and printing, instruments, and office machinery (computers) have high spill-in. Agriculture, mining, and most of the service sectors have low spill-in indexes.

Spillover between industries occurrs because a considerable number of inventions manufactured in the manufacturing sector are destined for use in non-manufacturing sectors. A surprisingly high degree of such spillover occurs. More than 30 percent of all inventions spill into the agricultural, mining, and service sectors.

Within the manufacturing sector, certain industries are not recipients from other industries. These include

Table 2
International Spill-in Comparison (by Numbers of Patents, 1975–1988)

	GRANTING COUNTRIES						
PRIORITY COUNTRY	U.S.	U.K.	France	Brazil	Japan	Germany	Canada
1. Non-Fertilizer Agricultural Chemicals							
U.S.	3316	670	287	552	1152	293	485
U.K.	249	726	147	203	625	153	113
France	136	120	595	116	247	124	77
Brazil	26	18	15	83	26	15	19
Japan	421	298	236	215	6156	276	154
Germany	540	122	122	599	1295	2389	263
Canada	68	24	21	21	46	28	132
2. Harvesting Machinery							
U.S.	623	36	40	26	0	39	121
U.K.	26	156	21	5	1	14	10
France	20	16	268	0	0	23	2
Brazil	0	1	0	87	0	0	0
Japan	7	15	10	0	13	12	1
Germany	23	28	59	9	2	365	4
Canada	31	9	3	3	0	3	58
3. Fertilizer							
U.S.	366	31	36	42	56	39	64
U.K.	14	75	9	15	13	15	10
France	21	10	147	25	20	23	10
Brazil	5	5	2	81	7	4	4
Japan	34	26	30	24	761	37	21
Germany	50	24	39	31	69	313	19
Canada	4	5	4	4	5	6	31
4. PHT Fruit							
U.S.	110	17	22	17	3	18	14
U.K.	5	19	4	0	0	3	1
France	10	6	102	3	1	9	2
Brazil	1	1	2	37	1	2	0
Japan	12	5	5	2	129	5	4
Germany	14	11	18	3	3	61	6
Canada	8	3	2	1	1	3	10
5. Biotechnology– Mutation/Genetic Engineering							
U.S.	115	65	33	24	183	33	12
U.K.	6	35	7	12	39	7	2
France	4	6	36	0	12	3	2
Brazil	0	0	0	1	0	0	0
Japan	27	40	35	4	322	23	1
Germany	3	11	10	0	29	56	0
Canada	0	1	0	1	0	0	0
6. Biotechnology– Microorganism & Tissue Culture							
U.S.	194	47	27	14	97	0	44
U.K.	18	36	9	7	38	16	4
France	13	12	38	2	16	13	11
Brazil	0	0	1	6	2	0	0
Japan	58	54	46	5	512	64	24
Germany	20	13	10	11	47	98	7
Canada	6	1	2	0	5	3	10

Table 3
Invention Spill-in Indexes by Industrial Class (Eight Countries 1969–1987)

INDUSTRY	SPILL-IN INDEXES		NUMBER OF INVENTIONS	
	Manufacturing Industry	Using Industry	Manufacturing Industry	Using Industry
Electrical Machinery	2.122	2.185	193017	123780
Electronic Equipment	2.199	2.201	217453	170053
Instruments	2.015	2.239	15253	52841
Office Machinery	2.071	4.345	46416	25225
Chemicals	2.854	2.788	251203	154047
Drugs	2.696	3.039	25473	47384
Petroleum Refineries	2.179	2.264	5449	19998
Aerospace	1.876	1.929	10415	15116
Motor Vehicles	2.009	2.044	89415	123828
Ships	1.664	1.779	7509	9287
Other Transport	1.642	1.961	13296	17892
Ferrous Metals	2.195	2.217	12902	25854
Non-Ferrous Metals	2.548	2.483	5182	16081
Fabricated Metals	1.806	1.887	194292	92863
Food, Drink, & Tobacco	2.271	2.106	15652	53146
Textiles and Clothing	2.019	2.488	32622	60642
Rubber and Plastics	1.952	2.381	72086	58526
Stone, Clay, and Glass	2.093	2.260	27366	28162
Paper and Printing	1.900	2.470	24955	44367
Wood & Furniture	1.620	1.705	32076	28738
Other machinery	2.060	2.084	530158	197678
Other Manufacturing	1.719	1.814	14998	39033
Agriculture		1.966		62920
Mining	1.842	1.903	1016	48060
Construction		1.735		152438
Transportation Services	1.767		41084	
Communication-Utilities		2.002		79992
Retail-Wholesale Trade	1.827		38290	
Finance-Business		1.687		42200
Government and Education	1.694		27679	
Health Services		2.031		93040
Other Services		1.866		50739

drugs and petroleum refining, and food and textiles: industries that mainly import from the chemical industries. Instruments, transportation, paper and printing are also net importers.

III. Implications for the Demand for International Education (i.e., for Technology Development)

Consider the following technological demand components for international training:

1. Demand for research capacity buildup.
2. Demand for research training capacity buildup.
3. Demand for upstream knowledge of technology.
4. Demand for upstream knowledge of science.
5. Maintenance and rebuilding of capacity.

The relative importance of these components will depend on the inherent spill-in nature of the technology and on the stage of institutional development.

Consider first the demand cycle in countries with good institutional policy and development regimes (i.e., countries that are headed for NIChood in the near future). For low spill-in fields of technology (e.g., agriculture), the priority in these countries will be to build research capacity closely followed by researcher training capacity (i.e., demands 1 and 2). Expatriate assistance and university agreements are useful in this buildup phase. At the end of the buildup phase, the demand for knowledge will have shifted to a demand for pretechnology science spill-in (demand 4) rather than for technical knowledge (demand 3).

If institutional support is good, rebuilding will not be required after these institutions are built. International participation in scientific conferences and networks will facilitate skill maintenance, and these research systems will eventually become part of the international system as they mature. Thus, in this somewhat ideal case, the heaviest demand for training will be in the early capacity development stage, and there will be little thereafter. (South Korea and Taiwan are good examples in agriculture.)

For high spill-in technology fields, the emphasis is different. The demand for early knowledge of upstream technology that can be copied and later imitated is high. This leads to earlier emphasis on research capacity and some delay in research or training capacity. It is less important in these fields to develop scientific capacity and more important to develop efficient training institutions to train large numbers of technically competent engineers with a strong applied technological bent (as opposed to a frustrated scientist bent). Because of the continuing need to be close to upstream technological developments, there is a significant demand for foreign training for this purpose.

For very high spill-in technologies, developing countries may decide not to develop a strong local research capacity. For intermediate spill-in technology in selected fields, they will build this capacity, although research capacity tends to lag behind basic technical training.

Typically, one finds a somewhat longer stage of capacity-building in technology fields where spill-in is high. Afterwards, there is a "late" or "second-round" boom in demand for overseas training to attain closeness to upstream technological development and to build more sophisticated capacity at home (again Korea presents a good example).

For those countries with poor institutional policy regimes, these scenarios do not hold. For low spill-in technology cases—as in agriculture—the capacity-building process has been attempted in most countries. Unfortunately, because of poor incentives, staff losses (often to international institutions) erode capacity, calling for high maintenance and rebuilding in many countries. This rebuilding process is usually much more difficult than the original building process. It does create some demand for international training, but financing institutions are not generally enthusiastic in their support for it.

Many countries with low spill-in have made the mistake of concluding that, because they cannot expect much technological spill-in, they can neglect the international dimensions of their institutions. This is a mistake because effective research institutions must be tied into the international science system if they are to remain viable. Even though they do not import much technology per se, they do import invention potential from abroad.

For high spill-in cases, the policy environment is often one of the closed, phobic type that stultifies the key demand for knowledge of upstream technology. Domestic engineering capacity is usually wasted in that it is difficult to upgrade domestic technology, and, given upstream technology dependency phobia, engineering schools tend to produce frustrated scientists. Demand for foreign training after initial buildup is low because of the policy regime. Employment opportunities for technologists gain slowly, and many technologists seek training domestically for the express purpose of migrating abroad for employment opportunities. (India is a relevant case here.)

For the very poorest countries, except for agriculture, little in the way of a technology strategy exists. Most industrial technology is acquired through large contracts with foreign firms. These countries, however, do require a process of capacity-building that may take longer than for more advanced countries, but nonetheless requires consistent planning.

Thus, we find that the demand for overseas training varies with the stage of development, the nature of the

technology, and the policy environment. For those countries with well-designed development policy regimes, the demand for overseas training is strong in all stages. With development, it shifts from the capacity-building components to the conduit and maintenance components associated with membership in international research communities.

For countries with poorly developed policy regimes, the demand for overseas training may not exist at certain times. Most countries will demand training for capacity-building in early stages of development. Many will effectively close off the international exchange of scholars, failing to recognize the value of overseas training in enabling more in-depth knowledge of scientific and technological development abroad. Many will pursue policies that effectively destroy the first round of capacity-building, and will later use overseas training to rebuild these institutions.

IV. Case Evidence

In this section, a brief discussion of technological development and international training is presented in partial support of the general discussion. Two case studies are presented—both for countries that do not qualify as having good institutional settings for technology development, except in agriculture. The first is a study of the Pakistan agricultural research system; the second, a study of invention and inventors in India.

Agricultural Scientists in Pakistan

The Pakistan agricultural research system is a good example of a reasonably successful agricultural research system in a country that has not yet achieved the conditions allowing for a successful industrial research system. In this regard, it is similar to India and a number of other countries. After partition from India, West Pakistan (now Pakistan) effectively inherited little in the way of a research infrastructure. It has essentially built an effective—though still too small—system over the past four decades. It has utilized training abroad to do this. (The current system is under stress because Pakistan has not committed the support necessary to maintain it.)

Table 4: Scientist Training: Pakistan Agricultural Research System

DECADE OF B.SC	NO. WITH B.SC (ALL)	PLACE DEGREE OBTAINED							
		Punjab	Sind	NWFP	Baluchistan	USA	Australia	Beirut	India and Other Countries
1. B.Sc Holders (All Scientists)									
1940s	111	86	5	1	0	0	0	0	19
1950s	383	297	41	21	0	0	0	0	24
1960s	950	545	206	186	0	2	0	0	11
1970s	634	333	168	129	1	0	0	0	3
Total	**2078**	**1261**	**420**	**337**	**1**	**2**	**0**	**0**	**57**
2. M.Sc Holders									
1940s	35	14	1	2	1	5	0	2	10
1950s	103	74	5	1	0	16	0	0	7
1960s	508	239	150	43	0	37	2	28	9
1970s	746	336	174	132	1	16	1	57	29
Total	**1392**	**663**	**330**	**178**	**2**	**74**	**3**	**87**	**55**
3. Ph.D Holders									
1940s	13	7	0	0	0	1	0	0	5
1950s	9	0	0	0	0	5	0	0	4
1960s	54	6	0	0	0	21	1	0	26
1970s	106	19	9	1	0	31	4	0	42
Total	**182**	**32**	**9**	**1**	**0**	**58**	**5**	**0**	**77**

NWFP = North-West Frontier Province

Table 5 Scientists by Current Location: Pakistan Agricultural Research System

DECADE OF B.SC	NO. WITH B.SC (ALL)	UNIVERSITY LOCATIONS			GOVERNMENT EMPLOYMENT				
		Punjab	Sind	NWFP	Punjab	Sind	NWFP	Bal.	Federal
1. B.Sc Holders									
1940s	133	22	3	2	57	21	13	2	13
1950s	383	86	12	6	159	43	35	6	36
1960s	952	110	65	26	349	128	163	19	92
1970s	638	45	42	10	211	108	125	24	73
Total	**2106**	**263**	**122**	**44**	**776**	**300**	**336**	**51**	**214**
2. M.Sc Holders									
1940s	18	3	1	0	1	7	2	0	4
1950s	103	33	0	2	38	6	8	1	15
1960s	511	134	37	18	129	87	43	16	47
1970s	752	67	65	23	263	113	122	11	88
Total	**1384**	**237**	**103**	**43**	**431**	**213**	**175**	**28**	**154**
3. Ph.D Holders									
1940s	1	0	0	0	0	0	0	0	1
1950s	9	3	2	0	2	0	0	0	2
1960s	54	25	1	2	9	2	7	1	7
1970s	106	49	13	4	8	8	5	3	16
Total	**170**	**77**	**16**	**6**	**19**	**10**	**12**	**4**	**26**

Tables 4, 5 and 6 describe this development and afford insights into the role of international training. Table 4 describes training of scientists by decades in which the B.Sc degree was obtained. Panel 1 shows that Pakistan did not send large numbers of students abroad for B.Sc degrees even in the early post-independence period. Most of the degrees obtained abroad were obtained in India. In the early period, the agricultural university in the Punjab (Lyallpur, now Faisalabad) was the leading producer of B.Sc's.

The second panel of Table 4 shows that Pakistan did use the United States and The American University in Beirut as a source of M.Sc degree training. However, by the 1950s, the agricultural university in the Punjab was already an important producer of M.Sc's and even of greater importance in the 1960s and 1970s. The agricultural university in the Sind and NWFP followed later. By the 1970s, the use of U.S. institutions for M.Sc training had declined.

For Ph.D training, the United States has been an important source, as have universities in India, the Philippines and Europe. Ph.D training in Pakistan began in the 1960s and was substantial in the 1970s.

Table 5 shows the distribution of scientists by employing institutions. The table shows that advanced degree holders were first used in universities where they contributed to the training of B.Sc's, M.Sc's, and, in the 1970s, Ph.Ds in the agricultural sciences.

Table 6 shows the distribution of training by discipline and by specialization. The relevant point of this table is that Pakistan's training strategy in upgrading skills has been relatively evenly distributed over disciplines and specializations. These three tables then portray a system with a skill structure developed roughly as suggested by the preceding discussion.

Table 7 reports evidence for researcher productivity, where productivity is measured by the number of lifetime publications by scientists. Lifetime publications are presented by decade of B.Sc and show the expected increase in publications for older scientists. It is also clear from these indicators that scientists with graduate degrees publish more than scientists with only a B.Sc. The data also show that the U.S. M.Sc has been a highly productive source of M.Sc training.

The regression estimates summarized in the table are from a statistical analysis of lifetime publications cor-

Table 8
Distribution of Scientists by Discipline and Specialization: Pakistan Agricultural Research System

1. Academic Discipline	All	M.Sc	Ph.D
Engineering	47	29	4
Social Science	87	80	9
Technology	56	41	4
Animal Husbandry			
Veterinary Medicine	334	172	34
Chemistry	119	92	10
Crop Sciences	1176	806	95
Fisheries	41	33	5
Forestry	31	18	3
Physics	18	15	0
Soil Sciences	130	39	1
Other	51	39	5

2. Research Specialization	All	M.Sc	Ph.D
Agronomy	185	128	10
Animal Husbandry	163	96	11
Biology	91	54	5
Chemistry	101	79	8
Engineering	219	163	23
Entomology	1	0	0
Fisheries	33	25	5
Forestry	29	14	4
Horticulture	105	69	6
Industry	51	39	3
Statistics	38	34	0
Irrigation	29	17	1
Physics	12	11	0
Plant Breeding	352	235	35
Plant Pathology	132	100	15
Social Sciences	74	66	10
Soils	338	170	16
Veterinary Medicine	117	58	16
Wood	10	5	0

recting for age, experience, discipline, specialization, and place of employment. Estimates are obtained showing the corrected publication differentials between graduate training and the B.Sc only. The OLS results are generally in line with the group mean data, except that they show that when corrections are made, the U.S. Ph.D and other foreign Ph.Ds are less-productive training grounds than the Pakistan Ph.D. In fact, obtaining a U.S. Ph.D gives no advantage over a U.S. M.Sc. The Tobit estimate, which corrects for the fact that publications are censored at zero, shows essentially the same thing, except that the Pakistan M.Sc is shown to be highly productive.

Inventors in India

A survey of inventors in India was undertaken in 1983 in collaboration with The National Council of Applied Economic Research in New Delhi.[14] A list of 1,000 inventors was prepared from data on the 1,000 most recent patents granted to Indian inventors in India. A mail survey was undertaken in February 1983. By June 1983, 243 inventors had returned usable questionnaires. Roughly 180 survey letters were returned because the inventor was not at the listed address.

Inventions were classified according to whether they were in the light, chemical, or engineering industries. The light industries included food products; beverages, tobacco, etc.; textiles; wood products; paper; leather products; nonmetallic products; repair services; and miscellaneous industrial products. The chemical industries included rubber and plastic and chemicals. The engineering industries included basic metals, metal products, machinery, electrical machinery, transport equipment, and other manufacturing.

Table 8 provides a summary of inventor characteristics for each industry group. A simple statistical (Chi-square) test was applied to determine whether characteristics varied by industry group. Relatively few significant differences (noted by an asterisk) existed.

Perhaps the most noteworthy indicators in the table are the data showing that inventors in India have very high levels of education and training. Almost 90 percent have finished college, more than half have finished graduate work and nearly 30 percent have Ph.D

Table 7
Research Productivity Measures

A. Lifetime Publications Per Scientist

DECADE OF B.SC	B.SC ONLY	M.SC			PH.D		
		Pakistan	U.S.	Other Foreign	Pakistan	U.S.	Other Foreign
1940s	8.35	24.77	51.61	16.36	37.67	43.00	30.80
1950s	7.36	10.99	22.50	16.10	36.14	20.31	17.47
1960s	1.39	5.28	12.70	6.48	13.67	16.77	21.97
1970s	.47	1.05	19.00	2.43	-	19.00	2.66
All	**2.26**	**5.77**	**24.33**	**10.09**	**24.71**	**22.75**	**19.68**

B. Regression Estimates of Productivity Differentials

	OLS	Tobit
Pakistan M.Sc over B.Sc	1.212 (1.34)	13.54 (8.19)
U.S. M.Sc over Pakistan M.Sc	10.110 (5.18)	9.496 (2.89)
Other Foreign M.Sc over Pakistan M.Sc	2.192 (1.33)	3.860 (1.90)
Pakistan Ph.D over B.Sc	19.482 (4.60)	22.80 (3.62)
U.S. Ph.D over Pakistan Ph.D	-8.005 (2.53)	-8.862 (1.91)
Other Foreign Ph.D over Pakistan Ph.D	-4.079 (1.47)	-2.047 (.50)

Table 8
Characteristics of Indian Inventors by Industrial Class

Educational/Professional Level	Light	Chemical	Engineering	All
Finishing Primary School	93.0	98.6	98.4	97.5
Finishing Secondary School	93.0	97.2	96.9	96.3
Finishing College	81.4	94.6	86.7	88.0
Finishing College Abroad	2.3	5.6	3.1	3.7
Finishing Graduate Work*	46.4	62.2	50.7	56.4
Finishing Graduate Work Abroad	11.6	13.9	7.8	10.3
Finishing Ph.D Degrees*	11.6	62.5	15.6	28.8
Finishing Ph.D Degrees Abroad*	7.6	18.1	4.7	9.1
Finishing Technical Training	46.5	40.2	47.6	45.3
Finishing Technical Training Abroad	14.0	19.4	10.9	14.0
Working in Public Firms	18.6	25.0	30.5	26.8
With Prior Patents	46.5	56.9	45.3	49.0
With Patent Pending	46.5	54.1	38.1	44.4
With Licenses	9.3	13.9	13.3	12.8

*Significant differences at 5 percent level

degrees. Of all college graduates, 88 percent have science or engineering degrees. In addition, 45 percent of all inventors have some form of technical training. The survey also found a significant degree of education and training abroad among Indian inventors.

Inventors in the chemical industries are much more likely to have Ph.D degrees than inventors in the light and engineering industries. However, the proportion of inventors with Ph.Ds in the light and engineering industries is not negligible. Clearly, Indian invention is a field of activity in which the highly educated compete. These data support the proposition that international training is more important in the highly transferable technology fields.

Table 9 classifies the data according to the training and education background of the inventor and invention status, that is, whether a current patent is pending (in addition to the patent granted that identified the inventor), whether the existing patent is licensed, and whether the inventor has patented before. No significant relationships were found between educational background and pending applications.

Those inventors with an Indian Ph.D are most likely to have a current patent pending. (It may be noted that all inventors have a relatively high likelihood—44.4 percent—of having a current pending patent and of having a prior patent, i.e., in the past five years as well.) Inventors with graduate work and Ph.Ds abroad are more likely than other inventors to have another patent in the past five years. Interestingly, college experience abroad appears to be associated with a higher probability of licensing the invention, but this is not true for graduate work abroad. This is probably due to the fact that many inventors with graduate work abroad work for multinational companies where inventions are typically not licensed to other firms.

Table 10 reports a summary of ranking of sources of ideas by inventors. Professional and trade journals and technologists within the firm are ranked highest as sources of technological ideas, while research institutes, industrial exhibitions, and competitors rank lowest. Inventors studying abroad also rank patent documents highly as sources of technological ideas. Industrial differences emerge in three cases. The chemical industries rank customers and workers and industrial exhibitions lower as sources of ideas, and patent documents higher, than other industries.

Table 9:
Invention Status and Training: Indian Inventors

Inventor Category	Pending Applications	Licenses	Prior Patents
With Study Abroad	44.9	11.6	55.1
With College in India	43.9	9.3	51.2
With College Abroad	44.4	33.33*	55.6
With Graduate Work in India	49.1	13.4	53.6
With Graduate Work Abroad	40.0	4.0	68.0*
With Ph.D in India	52.1	20.8*	50.0
With Ph.D Abroad	45.5	0.0	68.2*
With Technical Training in India	40.79	14.5	42.1
With Technical Training Abroad	50.00	17.6	47.0
All Inventors	**44.4**	**12.56**	**47.0**

*Significant differences at 5 percent level

Conclusions

The demand for improved technology in developing countries clearly creates a demand for international education. In technology fields with high location specificity, as in agriculture, the demand is dominated by capacity-building needs, first for the conduct of research and then for domestic training. Many—perhaps most—developing countries have now completed this building phase. The more successful and mature now have a small or secondary demand to and maintain links with the international science community, often through postdoctoral arrangements.

A number of such systems have not provided adequate incentives to maintain the institutions built, often at substantial cost. It is likely, for some of these systems, that there will be some demand for rebuilding, although the financing of the rebuilding efforts will be less certain than the financing of the original capacity-building efforts.

Table 10 Sources of Ideas (Percent of Inventor Group Ranking Source as Quite Important or Extremely Important)

SOURCE	ALL INVENTORS	INVENTORS STUDYING ABROAD	INDUSTRIAL ORIGIN ORIGIN OF INVENTION		
			Light	Chemical	Engineering
TechnologistsWithin a Firm	32.1	37.6*	43.2	31.9	28.1
Professional and Trade Journals	37.8	47.8	39.5	45.8	32.8
Customers and Workers	28.7	31.8	32.6*	22.1*	31.3*
Research Institutes	12.3	12.9	14.0	15.3	10.1
Patent Documents	27.1	39.2*	27.9*	37.1*	21.0*
Industrial Exhibitions	14.4	10.1	13.9*	4.1*	21.2*
Competitors	19.8	23.1	18.5	19.4	20.3

*Significant differences at 5 percent level.

For industrial technology, there is also a capacity-building demand. This demand is usually not as well articulated as is the demand for agricultural research and related training. Successful developing countries have depended on a capacity to train engineers and technologists, however. Less successful countries have not only had rebuilding problems, but often find that they are not training for the market as well as they might. This, however, is probably more of a demand problem than a supply problem, because economies with a closed position vis-a-vis technology imports usually have slow growth in demand for technical skills (if they don't import, they don't imitate).

For many fields of industrial technology with high spill-in potential, there is a continuing and important demand for international training to maintain close access to and knowledge of the technological frontier. Scientists and engineers with training abroad play an important role in facilitating the large-scale, "import and imitate" strategy that characterizes the NICs.

There is, of course, another dimension of technological demand for international education not treated extensively here. This is the demand by foreigners for training in developed countries for the purpose of obtaining employment in the training country. This is usually associated with technological skills and is a response to a demand for technology in the developed countries (e.g., engineering in the United States).

The wave of capacity-building for research and training in most developing countries is largely over. There are two important demands, however, where developed country institutions continue to serve the needs of developing countries. One is demand for rebuilding maintenance, which is presently poorly funded. The second is demand for access to the technology frontier, and is generally better funded. Both demands are strong for developing (and developed) countries with generally effective development policy regimes. For countries pursuing closed-economy policies and poor macro-policies, these demands are not strong. For these latter countries, a strong demand for immigration facilitation may exist.

Notes

1. For a general treatment of the sale of science and technology in development, see Evenson, R.E., and Ranis, G., eds. *Science and Technology: Lessons for Development Policy*. 1990. Boulder, CO: Westview Press.
2. There are few, if any, international research centers for industrial technology.

3. Some writers consider newly industrializing economies (NIEs) to be a more modern term, but the older tern will be used in this paper.
4. For a historical discussion of the linear model, see Rosenberg, N., in "Science and Technology Policy for the Asian NICs: Lessons from economic History," from Evenson, R.E., and Ranis, G. (see note 1).
5. Vernon has developed many of the features of the product cycle model in "Trade and Technology in the Developing Countries," from Evenson, R.E., and Ranis, G. (note 1).
6. Rosenberg (see note 4).
7. Ruttan discusses this process in "Toward a Global Research System," from *Policy for Agricultural Research.* 1987. Ruttan, V.W. and Pray, C.E., eds. Boulder, CO: Westview Press.
8. See the Pakistan case study in Section IV.
9. Evenson provides a review of the piracy relationship in "Intellectual Property Rights, R&D, Inventions, Technology Purchase, and Piracy in economic Development: An International Comparative Study," from Evenson, R.E., and Ranis, G., (note 1).
10. Ibid. Also, *Strengthening Protection of Intellectual Property in Developing Countries: A Survey of the Literature.* 1990. Siebeck, W.E., ed. World Bank Discussion Paper No. 112, Washington D.C.: The World Bank.
11. Evenson (note 9).
12. Evenson, R.E., and Putnam, J.D., in "Intellectual Property Management," from *Agricultural Biotechnology: Opportunities for International Development.* 1990. Wallingford, U.K.: CAB International.
13. Kortum, S.A., and Putnam, J.D., in "The Yale-Canada Industrial Patent Concordance: Its Construction and Use." 1987. Unpublished manuscript, Yale University, New Haven, CT.
14. Deolalikar, A., and Evenson, R.E., "Technology Production and Technology Purchase in Indian Industry: An Econometric Analysis." *Review of Economics and Statistics.* 1989.

Chapter 6

Namibia's Education and Training Needs

Walton R. Johnson

Although the Africans in South Africa are still experiencing domination imposed by others, Namibia, which received its independence on March 21, 1990, is usually regarded as the continent's last colony. After one year with a freely elected government led by the South West African People's Organization (SWAPO), many even consider it a showcase for African democracy.[1] But most observers agree that ultimately, Namibia's future depends largely on the quality of education the young nation can provide to its people. At the present time, large sections of the population have only minimal skills, past discrimination having prevented them from gaining managerial, administrative and technical experience.[2] As the newest nation on the continent, Namibia should be able to profit from the educational experiences of others in Africa and elsewhere. The dismal failure of foreign administrators to provide for African education could, paradoxically, turn out to be an asset. If Namibia can start with a clean slate, leaping directly into the twenty-first century, avoiding others' mistakes and exploiting the latest pedagogical and technological developments, it can establish a sound basis for long term self-reliance and development.

The Country

Formerly called South West Africa, Namibia was originally a colony of Germany. But like Germany's other colonies, at the close of World War I, it became a League of Nations mandate whose administration was delegated to an allied power—in this case, to Great Britain. South Africa, a former British colony and World War I ally, was geographically contiguous to Namibia, so Britain delegated Namibia's administration to the government there. Decades of armed resistance to South Africa's occupation and intense acrimony within the international community over its illegality were necessary before this little-known country achieved self-determination and independence.

Namibia has a land area of 823,000 square kilometers and an estimated population of between 1.5 and 2 million, 93 percent of whom are African. The population growth rate is 3 percent per year, three times faster than the economy. This will be a major impediment to development and one of the factors that makes education the principle key to development.

The country is served by a relatively modern physical infrastructure. It also enjoys a number of assets for its development—including natural resources (base metals, diamonds, uranium, zinc), a viable agricultural sector, off-shore fishing, tourism, low population density, hydroelectric power and natural gas. Its major development constraints, however, are a marginal ecology in some areas, high transportation costs, high export dependency, a high population growth rate, uneven spatial distribution of the population and high rates of urbanization. In addition, high spending by the South Africans in the 1980s, largely due to the security situation, led to massive borrowing which the Namibian government must now repay. The substantial national

indebtedness—nearly half the annual budget in 1988—is thus another major difficulty.[5]

The gross domestic product (GDP) in 1988 was approximately $1.48 billion. But, the distribution of wealth and income is greatly skewed. The country's white settler population (5 percent of the total) enjoyed an average GDP of R41,250, compared to R1,875 for wage-earning blacks (40 percent of the population), and only R212 for the majority of rural peasants and small traders.[4] The incomes from mining illustrate this point (see Table 1).

At independence, there were about 500,000 economically active persons, of whom 184,983 are in the formal sector dominated by 80,000 whites. Unemployment has been between 20 and 30 percent.[5] Due to difficulties in assessing participation in the informal sector, estimates vary between 30,000 and 40,000 people who are unemployed. With the population growing at 3 percent, though, there are between 9,000 to 13,000 new entrants into the labor market each year. And since jobs have been rising at about 2,000 per year, unemployment is increasing rapidly.

Throughout recent times, Namibia's economy has functioned as an integral part of the South African economy. Most of the profits from the lucrative mines and fisheries have gone there or to other outside interests. Because of these complex (and exploitative) linkages, exact figures are often unknown. Mining is Namibia's largest industry, accounting for about 34 percent of the GDP and 80 percent of export earnings.[6] Fishing, which is recovering slightly from years of decline, is the second largest industry and, potentially, a great source of wealth. Due to South Africa's illegal control of Namibia, for decades foreign fisherman ignored the 200-mile exclusion with impunity, greatly overfishing Namibia's waters. With proper management, however, these areas should recover. Furthermore, the inshore fisheries are still in good condition and are profitable.[7]

Manufacturing in Namibia only employs 9,400 people (see Table 2). The processing of minerals, meat and other agricultural products is severely constrained by the country's small, scattered population and its proximity to competition from South Africa. Trade, hotels and catering employ an additional 29,400. Mining employs 10,000, but jobs in mining have decreased steadily, from 24,500 in 1951 to 13,000 in 1989.[8]

Unfortunately, the largest employer is government. The South Africans bequeathed an overstaffed, expensive, and largely underqualified bureaucracy which draws from the national treasury rather than contributing to it. Making matters worse, the civil service is composed mostly of South African employees who were given job tenure guarantees under the terms of the independence agreement.[9] Namibian patriots will thus be locked out of many key positions for some time to come.

Agriculture is the most important sector of the economy. In 1988–1989, agriculture contributed only 8.8 percent to the GDP, but 70 percent of the population is dependent upon it.[10] The economically active population in the informal agricultural sector is approaching 245,000. In addition, there are 4,500 commercial farmers (whites), who employ 33,000 people (blacks), or 16 percent of the total labor force.[11]

Stock farming dominates the agricultural sector, subsuming 85 percent of the country's total surface area. This sector, however, faces major political and ecological problems. Despite the urgent political need to redistribute the land that settlers took from the Africans and the equally urgent economic need to provide more jobs for indigenous people on the land, some experts argue that, being so ecologically fragile, the large, white-owned commercial farms are unsuitable for peasant production.[12] They claim these areas can survive only with modern ranching methods. With the growing population, traditional techniques of ranching could indeed be harmful to the land. This is one of

Table 1
Average Wages (in Rand) of Miners, 1950–1980

Year	Whites	Blacks	Ratio
1950	1,430	75	19.1:1
1960	2,432	163	14.9:1
1970	3,970	369	10.8:1
1975	7,170	1,113	6.4:1
1980	13,682	3,265	4.2:1

Source: Walter Hartman, "The Roles of Mining in the Economy of South West Arica/Namibia, 1950 to 1985," unpublished master's thesis, University of Stellenbosch, 1986 (Table A.37).

Table 2
Formal Employment by Economic Sector, 1988

Sector	No. of Persons Employed	% of Total
Agriculture & Fishing	36,071	19.5
Mining & Quarrying	10,062	5.4
Manufacturing	9,442	5.1
Electrical & Water	1,273	0.7
Construction	12,657	6.8
Wholesale & Retail Trade; Catering & Accomodation	29,394	15.9
Transport & Communication	7,880	4.3
Finance, Insurance Real Estate & Business	4,327	2.3
Community & Social Services	23,137	12.5
Personal Services	23,137	12.5
General Government	44,463	24.1
Other Activities	1,261	0.7
TOTAL	**184,793**	**100.0**

Source: SWA/Namibia, Department of Economic Affairs, Manpower Survey 1988, Windhoek. These figures exclude the police and defense force.

the many areas in which education and training will play a crucial role.

Prospects are slim for creating sufficient employment outside agriculture to absorb the annual increase in job seekers. Reliance on the mining and fishing sectors for national income is thus only a short-term strategy for development, since many of these resources are not renewable and the work force is actually decreasing. A sound national plan must confront the long-term need to provide for all of Namibia's economically active population. Education will be a key here because, in the short term, it can make unskilled and semiskilled workers increasingly competent and self-reliant. In the long term, education can bring more people into the information age and create even more jobs.

The Legacy of Apartheid

With independence, Namibian society is undergoing major social changes. Despite the emotional war of liberation and the bitter consequences of apartheid, national reconciliation is leading to racial desegregation, democratic government and a more just society. There will be difficulties to overcome, however. The high rate of urban migration, especially to centers like Keetmanshoop, Rehoboth, Tsumeb, Swakopmund, and Windhoek, is expected to double the population in many of these towns, transforming them from small, white-dominated enclaves to burgeoning African towns with overtaxed physical and social infrastructures. Windhoek, the capital, is expected to have grown from 150,000 in 1989 to 300,000 by the end of 1991.[13] Another important development is that more than 45,000 exiled refugees have returned. While this group brings experiences from foreign countries and sometimes much-needed skills, they need employment and may aspire to higher standards of living.[14]

Namibia's lengthy experience with apartheid is the main context for understanding its present educational needs. During the crucial decades between 1950 and 1990, the South African government subscribed to the educational philosophy of Christian national education, which conceived of education as a tool for African subordination. At its inception in South Africa, Bantu education was explained in the following manner by the future Prime Minister, Hendrik Verwoerd: "When I am controller of native education, I will reform it so that the natives will be taught from childhood to realize that equality with Europeans is not for them....The Bantu must be guided to serve his own community. There is no place for him in the European community above certain forms of labor....Education must train and teach people in accordance with their opportunities in life...."[15]

The South African government imposed Bantu education on the people of Namibia in 1962.[16] Not only was Bantu education imposed, but even this education was limited to a few Africans. It wasn't until 1953 that secondary education for Africans first became available in the country, and only in 1961 that the government actually opened the first secondary school for them.[17] The subsequent introduction of Bantu education did nothing to substantially increase the number of Africans who had access to learning.

An Illiterate Majority

As a result of apartheid, 65 percent of Namibians cannot read or write.[18] Primary education has been compulsory for whites, but not for Africans. Per capita

expenditure on white education has been up to five times more than the expenditure on African education.[19] In 1982, as an illustration, although they constitute more than 90 percent of the population, only 261 Africans completed secondary school, compared to 131 coloreds and 832 whites.[20] During the early 1980s, educational opportunities for Africans did increase, but this was negated by the high drop-out rates. By 1988, the system's inability to retain students meant that 70,000 school-age Africans were not attending school.[21]

During the late 1980s, there were still only ten senior secondary schools for Africans, compared with 16 for the country's 5 percent white population.[22] Thus, only 2 percent of African children managed to reach high school, compared with 68 percent of whites; until recently, less than one percent of all Namibians completed high school.[23] That number had risen slightly by 1990, but still only 5 percent of the African population is enrolled in programs of study which could qualify them for university entrance.[24] To make matters worse, at independence, the country lacked approximately 3,000 classrooms. Africans in some parts of the country had an average of 59 pupils per classroom, while whites had an average of about ten per classroom.[25]

Ironically, English has also become an impediment in Namibian education. Consistent with apartheid ideology, Afrikaans was made the lingua franca and the national medium of instruction at the higher levels. English is now the country's official language and there has been no transition. In 1990, a staggering 81 percent of students failed the Standard 8 examinations (Grade 10), 66 percent of these due apparently to their poor command of English.[26] Many teachers are unable to teach effectively in the medium of English.[27] Using even broader criteria, roughly 88 percent of the country's teachers have been judged unqualified or underqualified.[28] In 1989, only 25 percent of teachers in black schools had themselves passed the high-school leaving exam (Matric); 20 percent had not completed Standard 8, which is two years below the Matric.[29]

The system faces serious problems with the content of education as well. Bantu education is oriented towards rote learning, with a curriculum unrelated to Namibia. Moreover, the syllabus is so detailed that little room is left for imagination and initiative on the part of teachers. Examinations demand regurgitation of material from the syllabus, and little of the knowledge pertains to the country's developmental needs or to specific job qualifications. The system has produced one of the highest drop-out/failure rates in Africa, estimated at 80 percent after four years.[30] Along with poverty, malnourishment and the need to find work, the poorly trained teachers, large class sizes, an offensive and irrelevant syllabus, harsh discipline, and the lack of social mobility have created this excessively high drop-out rate among Africans. For the few Africans who do manage to stay in school, many, especially those in farm schools, must endure hardship conditions of inadequate diets and squalid living quarters.[31]

Negative Stereotyping

Even more serious are the negative socializing intentions of the Bantu education curriculum. Ellis enumerates some of the destructive tropes and images created in Namibian schools: "The images in the texts reinforce a perception of whites as peaceful, resourceful and courageous, and of blacks as warlike and ungrateful . . . . South African values are strongly emphasized: a Eurocentric and fundamentalist Christian view of civilization, whose carriers are the whites . . . . The civilizing mission of the whites is presented in an unrepentently imperial fashion . . . . Training for citizenship inculcates a sense of a civilization under siege . . . . South Africa is a multiracial society, the text says, but blacks are presented as anthropological curiosities."[32]

Even after independence, some teaching retained this bias. There was a popular uproar, for instance, when it was discovered that in 1990, a white school's examination paper still contained anti-SWAPO propaganda and referred to SWAPO terrorists.[33]

Apartheid has had other negative consequences. For instance, schools in Namibia, like the schools in South Africa, have been places of African rebellion—rebellion against the syllabus, against the external government, and against the segregated society. Virtually every year between 1971 and 1989, there were student uprisings, " . . . often ending in mass expulsions of pupils, the sacking of teachers and the victimization, even torture, of supposed agitators.[34] Replacing the atmosphere of anger, resistance and disengagement with order, discipline and cooperation will not be an easy task. While it was mainly the culture of rebellion

that sustained Namibians against overwhelming odds through many decades, paradoxically, that culture is dysfunctional in the new nation. Change, however, does not come easily.

Additional facts about Namibia's education can be summarized as follows:

1. In 1988–1989, there were 287,000 Namibians in primary school, 85,000 in secondary school, 1,000 at university. Only 300 were enrolled in vocational programs.
2. In 1990, more than 40 percent of school-age children were not attending school. Of the 69,000 children who do enroll in Sub A each year, 30 percent drop out before moving to Sub B.
3. Between Standard 9 and Standard 10 (the last two years of secondary school), the drop-out rate in 1989 was 34 percent.
4. For those who stay in school, English deficiencies are so great that the national pass rate was a mere 20 percent in 1989.[36]

Namibians in Exile

The social and political problems at home compelled many young Namibians to go into exile or to join the liberation movement. While still in exile, SWAPO provided education for tens of thousands of refugees. By 1984, roughly 70,000 Namibians were in exile, and only a small number of these were involved in the armed struggle.[37] Most found their way to camps in Angola and Zambia. SWAPO assumed responsibility for them and, among other things, provided for their education. By the mid-1980s, the refugee school in Angola had between 8,000 and 10,000 pupils and the school in Zambia between 2,000 and 2,500.[38] These Namibians received a healthier type of education, often including specific job skills. As already noted, their return home is helping the manpower situation.[39]

The discussion so far has been with respect to primary and secondary schooling. As regards higher-level training, apartheid's legacy is the major problem as well. The neglect of higher education for Africans by the South African government was so great that, throughout the 1970s, only 300 Africans achieved the qualifications for university entrance.[40] In 1978, while 2,268 white Namibians were studying at universities in South Africa, only 157 coloureds and 98 Africans were in similar studies.[41] In 1982, only 23 Africans and seven coloureds, as compared to 359 whites, earned the qualifications for university entrance.[42]

Higher education inside Namibia was nonexistent until The Academy—consisting of the University of Namibia, the Technikon, and the College for Out of School Training—was established in 1980. As late as 1988, the teaching staff at The Academy was 186, of whom, characteristically, only 25 were African, mainly at the junior ranks.[43] By 1990, only 476 students were enrolled for degrees, the vast majority of The Academy's students being registered for non-degree programs. Even today, therefore, most Namibians doing university studies are outside Namibia: 3,227 are studying at South African universities and over 4,000 are studying in other foreign universities.[44] Now that an African has been appointed head of the University of Namibia, however "... there are high expectations for the future direction of the university under his guidance ...."[45]

Shortages in Most Skill Areas

Apartheid thus explains the acute shortage of skilled and professional Africans, especially, according to some observers, in fields like engineering, architecture, agriculture, horticulture, forestry, veterinary medicine, technical areas, economic planning, marine resources, and some categories of the legal profession.[46] In 1984, the shortage was estimated at 6,759 and has certainly grown since then.[47] Some of the available figures are noted in Tables 3 and 4.

It is important to mention that the education system was not the only institution that impeded the development of skills among Namibia's African population. So, too, did the legislation governing labor relations. For instance, the Wages and Conciliation Ordinance of 1952 limited collective bargaining rights to whites.[48] Even after 1978, when Africans could legally join unions, " . . . general collective bargaining rights . . . were not extended, leaving unions obliged to negotiate individual access and representation agreements with employers."[49] In the early 1980s, SWAPO did support the National Union of Namibian Workers, but arrests of organizers and limits on the union's funding hampered its activities. The upward progression of Africans into skilled and professional areas was clearly impeded by these types of constraints.

Table 3
Employment of Africans* and Whites in Namibia, 1975

Category of Work	African*	White	Total
Professional, semiprofessional, technical	5,305	5,877	11,182
Managerial, executive, administrative	16	2,164	2,180
Clerical	1,320	6,483	7,803
Sales and related	955	2,184	3,093
Manufacturing of glass, brick, etc.	329	7	336

*Including coloureds (Coloured, Rehobithers, and Namas)
Source: R.R.A. Department of Labor, Manpower Survey, 1975, from Wh. H. Thomas, *Economic Development in Namibia*, 1978.

Table 4
Education/Training Estimates for the Labor Force (Early 1980s)

Level	Whites	Coloureds	Blacks	Total
University or equivalent	5,000	24	10	5,035
Other tertiary	5,000	12	10	5,022
Secondary or equivalent	10,000	3,000	200	13,200
Other postprimary	7,500	3,000	2,000	12,500
Complete primary	9,000	24,000	19,000	52,000
Substantial primary	–	9,500	110,000	119,500
Negligible	–	9,500	300,000	309,500
TOTAL	36,000	48,550	431,220	516,757

Source: Economist Intelligence Unit, 1990–1991 (Table 4.2)

At independence, three separate education departments existed in Namibia, one each for Africans, whites and coloureds. Within each department, there were further subdivisions based on ethnic group. Under this system, African education " . . . suffered disproportionately from . . . fragmentation, from lack of funds, shortage of textbooks and a severe dearth of trained and qualified teachers."[50] While many apartheid laws, such as the Group Areas Act, the Separate Amenities Act, and the Mixed Marriages Act, had been previously scrapped, concerted pressure from conservative white groups insured that hospitals and schools were not desegregated until just before independence.[51]

Post-independence analyses describe the education system as " . . . inefficient, ineffective, wasteful, fragmented, racial, ethnic and unequal . . . . The educational system(s) produced a social menace: illiterate, semiliterate, unskilled and unemployable youth. The threat to the social fabric of the country was further aggravated by the fact that the white youth were well educated, fully employed and better remunerated. It has been a story of two societies, worlds apart."[52]

It was only in January, 1990, just two months before independence, that the public school system was officially desegregated.[53] Despite this new open-education policy, the process of integration has so far been marked by a fair amount of foot-dragging. Many former all-white schools " . . . are standing well equipped and half empty while pupils in former black schools are packed into classrooms sardine-style."[54] A school at Usakos is typical. Built to accommodate 800 pupils, but with an enrollment of 60, it still had not opened its doors to Africans, despite the fact that the local African school had a teacher-pupil ratio of 1 to 45, and as many as 50 pupils in each of its classrooms.[55]

Furthermore, to a considerable degree, the rules of desegregation are designed to preserve much of the status quo ante, official desegregation notwithstanding. For instance, generally acceptable educational norms are being used to govern African admission to formerly white schools, including stipulations that prospective pupils be able to pay the fees, be proficient in the language, be ready educationally, be in the age categories for the relevant classes and comply with the rules and discipline.[56] For historical reasons, only a limited number of Africans can meet these conditions. Moreover, as the language of instruction in most white schools is Afrikaans, many believe "making fluency in Afrikaans a precondition is only looking for an excuse to exclude our kids."[57] For most Africans, Afrikaans is not the preferred language in any case, so those who have other options are less inclined to seek places in Afrikaans medium schools. Vast numbers of pupils, however, have no other options.

A big rush of African children into white schools after independence has not occurred.[58] Nevertheless, tensions have often been high. At Wennie de Plessis, a school designed for 600 pupils, only 250 white students were enrolled in 1990. After desegregation, four black students were admitted while 20 others were refused on the grounds that their Afrikaans was insufficient or that they were too old for their class. The popular outrage led to plans for mass demonstrations. The situation was defused only after a senior government officer visited the school and instituted a policy that no child would be kept out of school because of insufficient Afrikaans or age.[59]

Despite the important issues facing the citizenry, integration for the sake of integration has not been a major objective of the Namibian government. Calling them "gentlemen's agreements," the minister of education, youth and culture refers to the desegregation of white schools as "change with continuity." The most urgent task in the government's view has to do with the content of education—moving away from Bantu education toward a more relevant curriculum.

Problems of Assessing Educational Needs

Immediately after independence, officials embarked upon a consultative, research and survey process to gather information about the country's education. They reported, " . . . we could detect two crises: crisis of expectations on the part of the majority who were historically left out, and the crisis of confidence in the government reform process on the part of those who favor the status quo or even the statu quo ante."[60] The pressing issues included access to certain schools, language policy, school fees, teacher training and private schools. Accurately assessing the needs and formulating strategies to meet them, however, is proving extremely difficult at this early stage. Much of the relevant information and resources are simply not available.

Insufficient census and manpower data are the major impediments to quickly formulating a plan. The first census in Namibia was in 1921, and a census has been taken every ten years since then. The last one occurred in 1981, during a period of intense political and military conflict. The first post-independence census will begin in September, 1991. Not only will the information be the basis for educational and manpower planning, but it will affect such matters as the internal political boundaries and the delivery of health services as well.[61]

In the short term, however, decisions have to be made. In 1991, according to the constitutional guarantee of free primary education, the system should absorb 100,000 new primary pupils.[62] Such substantial increases will occur each year thereafter. Education experts are now working on a new curriculum, which will perhaps be an adaptation of the Cambridge University syllabus.[63] Others expect Namibia to be the first African nation to adopt the International General Certificate of Secondary Education, but this requires a highly competent teaching corps that it does not yet have.[64]

With regard to tertiary education, the Namibian government has established a high-powered commission on higher education, composed of local and international scholars, to assess the country's needs in this area. Its report is due in July, 1991. Of course, a full higher-education program can only be developed when the manpower survey and national census have been completed. In their absence, however, it is already being assumed that in the future, most tertiary training will be undertaken in Namibia. Students will go elsewhere only when pursuing courses unavailable at home or when international experience is essential to their job performance. It is also assumed that affirmative action in higher education will aid individuals from underrepresented groups.

Future Policy Towards Education

Whatever the outcome of the census and manpower studies, the constitution of Namibia articulates the values that will govern future policy. It guarantees the following basic rights: the right to education; free primary education; compulsory schooling up to the age of 16, or compulsory primary education; the right to cultural expression in language, tradition and religion; the right to private schooling; protection against discrimination based on race, color or creed; the prohibition to propagate or practice the ideology of apartheid in educational instruction; and the right to affirmative action in education with the view to addressing historical wrongs as a result of apartheid.

"The overall aim is to phase out the anachronistic systems of colonial and apartheid miseducation within the next five years."[65] As a result of this commitment, the second largest portion (18.2 percent) of Namibia's $1 billion independence budget was devoted to education.[66] Priority number one is the " . . . improvement of the learning environment for historically disadvantaged schools through strengthening of the teaching staff, supply of library and text books, administrative and supervisory support services, etc."[67] Initial reforms already have been launched in the areas of administration and management, educational content, language, organization, teacher education, agriculture in education, and supervision and advisory services. Most important, of course, has been the collapse of the old system of ethnic education departments into a national, unified, common system of education administration and management.

In the absence of hard data, education planning must rely on broad principles at this stage. Some of these principles are common to the entire southern region of Africa and are contained in a report of the Southern African Development Coordination Conference (SADCC), of which Namibia is a member.[68] The two most relevant principles for Namibia are:

1. Developing human capital to its fullest potential is the *sine qua non* for tackling socioeconomic problems.
2. Human development is a lifelong process, involving education and training, improved health, ability to earn a decent living, the exercise of economic and political choice and guaranteed human rights.

Among the most important practical points of departure for Namibia is that nearly 70 percent of the population lives in rural areas, and that most of the citizenry derive income from self-employment in agriculture or small-scale, informal businesses. They will continue to do so for the foreseeable future. Yet this sector is bifurcated into two completely different productive systems. Extension, research, credit, input supply and cooperatives are common in the commercial sector, but nonexistent in the peasant sector. The commercial sector (white) is well served by education, graduates of the agricultural colleges finding employment easily. In the communal areas (African), " . . . underqualified teachers in badly equipped schools are administering curricula that are not adapted to the cultural environment of the children, nor to their language. Therefore, to be effective, human resources development programs have to address the needs of this majority."[69]

Opportunity for Nonformal Education

African leaders justifiably criticize the past tendency to understand education and skills development in terms of formal education, with less attention given to the conditions necessary to promote a lifetime learning experience and the ability to make a living.[70] Indeed, some experts believe that better living conditions for the majority of Namibians can be realized only by increasing the productivity of the subsistence areas, particularly in the more populated north. By bolstering the informal sector, the argument goes, future problems related to food production, urbanization and unemployment might be partially alleviated. It is certainly the case that neglect of this sector will exacerbate difficulties in these areas.

In the past, opportunities for education have largely bypassed the rural populace in favor of the urban areas, mining towns and ranching communities. Since no form of education is more economically productive than that which enables those who are already working to do their jobs better, Namibian officials hope to construct an adult education program to compensate substantially for the deficiencies of the past.[71]

All future educational initiatives, formal and informal, must focus heavily on women. The majority of the rural population are women who shoulder the major responsibility for the welfare of their families.They account for most of the noncommercial agricultural production. In addition to the important issues of equity and human rights, to continue to neglect such a crucial asset would be economically shortsighted as well.

Experience and state-of-the-art thinking about education should help chart the most appropriate and navigable course for Namibia. Local priorities, of course, are most important, and outsiders should not presume too much. But curriculum reform in Namibia, especially the attempts to counter the ills of Bantu education and to rid the syllabi of Eurocentric bias, can profit from the heated debates in the United States. The struggle to create an inclusive curriculum has sparked bitter confrontations from New York to California.

New textbooks in the United States, which are supposed to be more sensitive to the history and culture of

Americans of color and of women, have come under severe attack from both the left and the right. This undoubtedly presages Namibia's experience. But, recalling that history is a kind of property whose owner controls the future, Namibians must deal openly with education's role in cultural domination and social control. In the American context, one writer concluded " . . . the issue comes down to the political one of whose vision of America one accepts".[72] In Namibia, the curriculum must be true to a vision of a proud and independent nation.

Making Women Visible

While the Eurocentric character of the curriculum in Namibia is an obvious issue, less obvious, but perhaps more important ultimately, is the issue of gender. Just as people of color are largely invisible in the syllabi, so too are women. The women's movement is leading the thinking about transforming the curriculum in the United States, providing perspectives and theories that are germane to all forms of exclusion. The title *Transforming Knowledge,* for instance, succinctly captures the main theme of Elizabeth Minnich's book on the curriculum. It is not merely a matter of having more information about women in the classroom, she argues. It is about " . . . a complete rethinking, first of the basic models of reality, truth, and meaning in the dominant tradition, and then of all the knowledge predicated on them."[73] " . . . knowledge that is claimed to be inclusive—claimed to be both about and significant for all humankind—but that is, in fact, exclusive, must be transformed, not just corrected or supplemented."[74]

These are matters of great import for Namibia, far surpassing the importance of class size, desegregation, language of instruction, etc. The issues concern the fundamental starting points of the curriculum. The twenty-first-century curriculum must be inclusive. Namibia should begin now to avoid having to revise later. So far, there is little evidence that these matters are receiving sufficient attention or that the needed transformations are being planned. Perhaps the American debates can prompt and inform similar debates in Namibia. The issue is especially urgent because in southern Africa, the American term "multiculturalism" can sound as though it is another version of apartheid's idea of a multinational states' or groups' rights, leading to important matters being mistakenly dismissed out of hand.

It is equally apparent that twenty-first-century technology is available to Namibia, and that the planning of an education delivery system should make maximum use of this technology. At increasingly plummeting costs, satellites, computer networks and associated technology can transmit information anywhere. Though there are still substantial benefits to in-class education and to international exchanges, these modes of training are no longer absolutely necessary. In fact, given the long-term costs of salaries, training and travel, other disadvantages, such as brain drain, inappropriate training, Eurocentrism, and the creation of foreign-oriented elites, make a strong case for Namibia's anchoring its education system in the most advanced technology.

In the United States, cable television and satellites are already delivering complete degree courses nationally. While distance degree programs have been beamed locally or even regionally for some time, now the signals are carried throughout the country. Engineering schools and business schools are among those offering degrees in this manner. American educators have concluded that earning academic degrees over distance-learning systems is the way of the future for much of the population. These programs will not and should not replace the traditional campus structure, but they are there for students whose personal circumstances do not permit enrollment in traditional programs.[75]

Technology and Distance Education

In Namibia, where there has not been much investment in traditional campus structures, and given the cost of such structures, the technology of distance education should receive high priority. There is already a lengthy tradition of such training in southern Africa, with the majority of Africans in the region having received degrees from UNISA or VISTA. Coupling this tradition with the latest technology should be a prominent objective of Namibia's master plan. Here, too, there is little evidence that this matter is receiving sufficient attention. Overseas experience in these areas could be of considerable assistance in thinking through a national plan.

Even when learning occurs in a traditional setting, technology is an increasingly efficient teaching aid, one that can even offset the need for a great deal of

expensive equipment. For instance, computer programs are now helping in the teaching of physics and in motivating students to study science. Experiments that would have taken several hours in a well-equipped laboratory take less than five minutes on the computer. Moreover, even "...physics majors learned the subject matter more thoroughly with computer assisted teaching than without it."[76] For a mere $20, at least one textbook publisher is preparing to sell computer programs that simulate real life situations.[77] Applying this technology in other disciplines is the wave of the future. Namibia must design a system of higher education with these developments in mind.

Underpreparedness is a major problem for Africans entering post-secondary studies, so various types of bridging programs are being conceived. In many American colleges, though, computers are now being used to help overcome basic skills under-preparedness. Supplementing the classwork, computer exercises in reading, writing and mathematics are proving effective in overcoming academic deficiencies. Nearly 200 software programs for developmental or remedial courses are already available, and, fortunately for Namibia, in English.[78] Such programs will be continually improved and will become increasingly sophisticated. Americans and others can assist Namibia by providing the hardware and software and by sharing our experiences in their use.

The implications of employing twenty-first century technology are considerable, affecting all levels of education, including teacher training and the very structure of the new educational institutions. The clean-slate starting point from which Namibia is proceeding should permit maximum planning with future technology in mind. Simply replicating educational models that do not take account of modern technology would be a grave mistake.

Regional Collaboration With Namibia

Given the dearth of existing institutions, the regional demography and the economic implications, programs of human resources development and utilization and increased productivity must have both national and regional dimensions.[79] Like other countries with small populations and limited resources, developing tertiary institutions in Namibia to train a comparatively few skilled people may not be feasible or cost-effective. Ideally, there should be a pooling of resources with neighboring countries in order to maximize economies of scale. The need for regional and continental cooperation on matters of curriculum, institutional capacity building, and the sharing of training opportunities could be greatly realized by the implementation of new technology. Namibia's initiatives could be the catalyst for this cooperation.

Namibia can also look to international education to meet many of its needs for specialized training. Emphasis in overseas education should be placed on graduate education that provides a basis for both theoretical and applied research. The primary focus will be on some social sciences, science and technology, accounting and management, agriculture and health sciences. A multifaceted approach is required in which domestic, regional and international education programs are judiciously chosen to meet quite specific objectives. A good plan will consciously match the creation of high-level manpower with the national demand.

Use should be made of less traditional models. Short courses overseas for professional advancement, for example, are highly effective in rapidly increasing the skill level of locally trained professionals. For some years now, the Career Development Fellowship Program has brought black South African professionals to the United States for enrichment experiences. In one semester, they engage in academic programs at a university and interact in the field with their American counterparts. The programs are individually tailored to meet the specific job-related needs of the participants. After three to four months, the professionals return, enriched and invigorated, to their posts at home.

Practical and on-the-job training, with or without an academic component, is also a highly effective method of transferring specific, job-related skills. Split-campus training and more traditional, postgraduate research training have proven to be highly appropriate overseas training schemes.[80] Namibia is currently developing such relationships with several overseas universities.

APPENDIX

1. Employment of Africans, Coloureds, and Whites in Namibia, 1971

Category of Work	African	Coloured	White	Total
Professional, semiprofessional, technical	1,987	535	3,856	6,378
Managerial, executive, administrative	—	5	2,112	2,117
Clerical	554	384	7,114	8,052
Sales and related	752	366	2,557	3,675
Manufacture of glass, brick, etc.	78	30	6	114

Source: M. O'Callaghan, *Namibia: The Effects of Apartheid on Culture and Education*, UNESCO, 1977.

2. Employment of Africans, Coloureds, and Whites in Namibia, 1973

Category of Work	African	Coloured	White	Total
Professional, semiprofessional, technical	3,659	271	5,447	9,377
Managerial, executive, administrative	29	8	2,180	2,217
Clerical	964	259	7,248	8,471
Sales and related	1,340	556	2,103	3,999
Manufacture of glass, brick, etc.	106	13	2	121

Source: Wilcox, S.C., *Transition in Southern Africa*, Namibia, 1977.

Notes

1. "Namibia: The lesson of a year's independence." *Cape Times.* April 11, 1991.
2. *Namibia Outlook.* 1990. New York: United Nations Department of Public Information, p.9.
3. Ibid, p.6.
4. *Cape Times* (see note 1).
5. "Now Sam looks to economic Uhuru." *The Sunday Times.* March 25, 1990. Economic Intelligence Unit Country Profile. 1990-1991.
6. "New era dawns for Africa's last colony". *Democracy in Action.* October, 1989. Economist Intelligence Unit Country Profile. 1990-1991.
7. Leistner, E. and Esterhuysen, P. 1990. *Namibia 1990,* p.14. Pretoria: Africa Institute.
8. Ibid, p.15.
9. *Cape Times* (note 1).
10. Economist Intelligence Unit Country Profile. 1990-1991. Reports that 250,000 Namibians are engaged in subsistence agriculture, primarily in the north.
11. *Democracy in Action,* (note 6).
12. Leistner, E. and Esterhuysen (note 7), p.14.
13. *Democracy in Action* (note 6).
14. *Namibia Outlook* (note 2), p.3.
15. Johnson, W. 1982. Education: Keystone of Apartheid, p.219. From *Anthropology and Education Quarterly.* 13.3
16. Rukoro, V. 1988. "Research Project on Higher Educaton for Namibia." Unpublished paper.
17. Leistner, E. and Esterhuysen (note 7), p.178.
18. Kamatuka, N.A. 1991. Namibian Education—Where Do We Go From Here? Paper presented at the launching of the Namibian Students Association. Blair Nebraska: Dana College.
19. Rukoro, note 16. Also: Ellis, J. 1984. *Education, Repression and Liberation: Namibia.* London: Catholic Institute for International Relations, p. 8. Says the white child had six to ten times as much spent on him as the black child. Also see Leistner, E. and Esterhuysen, P. (note 7), p.179.
20. Ellis (note 19), p.39.
21. *Namibia Outlook* (note 2), p.10.
22. Kamatuka, N.A. (note 18), p.3. In 1986, for instance, although they are 93 percent of the population, Africans constituted only 70 percent of the students enrolled in the last year of high school. Moreover, given the inequities in quality, only 16 percent of the Africans met the university entrance requirements as compared with 41 percent of whites.
23. Kamatuka, N.A., Ibid, p.3.
24. *Change with Continuity.* 1990. Education Reform Directive: 1990, A Policy Statement. Winhoek: Ministry of Education, Culture, Youth and Sport. November 28, p.27.
25. Leistner, E and Esterhuysen, (note 7), p.178.
26. "Outrage at Namibian exam results." *South.* February 8, 1990.
27. Turner, J. 1990. *Education in Namibia.* Report of a Consultancy for the Ministry of Education, Culture, Youth and Sport. March 25, pp.51-52. There have been some attempts to address the problem. An English upliftment program has been begun in Rehoboth " . . . to help educators improve their own English and pass the skill to others". By means of workshops, use of English newspapers and posters, and the development of a standard English policy, the program will pursue its objectives.
28. "88 percent of Namibian teachers not qualified." The Namibian. May 18, 1990. Qualified is defined as having had four years of tertiary education.
29. Liestner, E. and Esterhuysen (note 7), p.179.
30. Ibid, p.179.
31. "Fears and dreams at Okakarara". *The Namibian.* April 26, 1990. At the Okakarara technical school, for instance, " . . . students are housed in garages, primary school children are sleeping 46 in a 12-person army tent, and virtually every rented house displays a gaping crack running the length of its side."
32. Ellis (note 19), pp.16,22,32,42,46.
33. "Education minister will launch probe." *The Namibian.* June 14, 1990.
34. Ellis, J. (note 19), p.39.
35. SADCC Conference, 1991. SADCC: Human Re-

sources Primary Factor in Development. January 30–February1, Table 2.

36. "Namibia 'inherited' a schools crisis." *Daily Mail.* July 26, 1990. In the white community, however, " . . . pass rates were always close to 100 percent, the drop-out phenomenon 'rare' and repeating a class 'an unusual happening.' "
37. Ellis, J. (note 19), p.54.
38. Ibid, p.57.
39. "The situation with the emergency school program." *The Namibian.* April 27, 1990. Since 1989, the Emergency School Programme of the Repartition, Resettlement and Reconstruction Committee (RRR) has been operating for returnee children who could not be accommodated in other schools. By April, 1990, 1,500 children and 89 returnee children are catered for, with 11 primary and secondary facilities.
40. Ellis, J. (note 19), p.8.
41. Ibid, p.85.
42. Ibid, p.39.
43. Rukoro, 1988:13
44. Turner, J. (note 27), p.122. It is likely that the bulk of Namibians studying in South Africa are white, while the bulk of those studying elsewhere are African.
45. "Namibia's sole higher-education institution racked by faculty resignation and discord." *Chronicle of Higher Education.* February 27, 1991. "Article on Namibia too negative, misleading;" Letters to the Editor, *Chronicle of Higher Education.* May 8, 1991.
46. "Cuban doctors." *Windhoek Observer.* March 30, 1991. In the short term, technical assistance is a partial solution. Cuba, for instance, has sent 43 doctors and technicians to assist with the dire needs.
47. Leistner, E. and Esterhuysen, P. (note 7).
48. Economist Intelligence Unit Country Report. 1990–1991.
49. Ibid.
50. *Namibia Outlook* (note 2), p.9.
51. "Namibian govt schools open doors to blacks". *Cape Times.* January 18, 1990.
52. *Change With Continuity* (note 24), p.3.
53. "Namibian schools, hospitals to open to all races." *Cape Times.* January 11, 1990. Some apartheid regulations, such as the Group Areas Act, the Separated Amenities Act and the Mixed Marriages Act, had been scrapped as early as 1977. The force of white right wing pressure, however, insured that schools and hospitals were segregated until January, 1990.
54. " 'Could do better,' white schools are told." *The Namibian.* August 20, 1990.
55. "Ghosts of apartheid past haunt Usakos." *The Namibian.* August 17, 1990. Similarly, in Leonardsville, the white school has a capacity of 300 pupils but only accommodates 28. Its double-story hostel has only 18 pupils, while the church-run hostel in the African township has 165 pupils living in space designed for 60. ("Learning at Leonardsville, a matter of black and white." *The Namibian.* March 8, 1990.)
56. "Colleges and hospitals to be desegregated." *The Star.* January 15, 1990.
57. "Learning at Leonardsville, a matter of black and white." *The Namibian.* March 8, 1990.
58. "Namibian schools open to all and SA pupils enrol." *The Argus.* January 18, 1990.
59. "Tension at Gobabis defused." *The Namibian.* September 21, 1990.
60. *Change with Continuity* (note 24), p.5.
61. "Population and housing census." *Windhoek Observer.* April 27, 1991, and "Information from Census is of vital importance." *Windhoek Observer.* July 13, 1991.
62. "A new education code to promote democracy." *The Namibian.* August 17, 1990.
63. "Mixed education: Namibia's reality." *The Namibian.* October 16, 1990.
64. "Namibia to look at top international education syllabus." *The Namibian.* June 8, 1990.
65. *Change with Continuity* (note 24), p.37.
66. "Namibian budget totals R2,576-bn." *The Argus.* July 6, 1990.
67. *Continuity with Change* (note 24), p.18.

68. SADCC Conference (note 35).
69. Ibid, p. ii.
70. Ibid, p. 14.
71. Turner, J. (note 27), p. 35.
72. "Class Struggle." *New York Times Magazine.* September 29, 1991. p. 47.
73. Minnich, Elizabeth. 1990. *Transforming Knowledge,* p. 28. Philadelphia: Temple University Press.
74. Ibid, p.31.
75. "18 universities join effort to offer Bachelor's degrees in management, entirely through cable television."*The Chronicle of Higher Education.* September 25, 1991.
76. "New computer package provides a flexible tool for teaching physics concepts to nonmajors." *The Chronicle of Higher Education.* September 25, 1991. "Supercomputing center tries to attract high school students to sciences." *The Chronicle of Higher Education.* September 25, 1991.
77. "Prentice Hall plans to offer computer programs with 5 physics textbooks to allow simulations." *The Chronicle of Higher Education.* September, 25, 1991.
78. "Using computers to teach basic skills." *The Chronicle of Higher Education.* October 2, 1991.
79. SADCC Conference (note 35), p. v.
80. See Selvaratnam, V., in this volume.

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Chapter 7

Thailand: A Case Study

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SECTION 1: INTRODUCTION

Strategies for gaining a command of modern knowledge and applying it to national purposes continue to baffle leaders of national development; too often the substantial investments made to acquire expertise, through overseas training and other means, yield disappointing returns. This is a brief study of two institutions that appear to have repaid what was invested in them by international donors and the host government many times over. The study seeks to identify the strategies and policies of the host government, universities, and donors that contributed to that success.

In the last three decades, Thailand has achieved remarkable economic success without the benefit of bountiful resources or unusual levels of capital assistance. It has also had success in lowering mortality and morbidity rates, reducing fertility, increasing food production, and educating its people. It is, we suggest, no coincidence that the country also has developed notable institutions of higher education and research which contribute in a variety of ways to understanding and dealing with national problems.

Success has too many fathers to allow us to ascribe parentage to a few institutions. But without claiming that Thailand's accomplishments in economic policy making and public health spring directly from its premier universities in those fields—Thammasat and Mahidol—it may be useful to consider some of the ways these universities contribute to national achievements and then to focus on how these institutions developed.

Our purpose is to concentrate not on what is unique to the Thai experience, but on what has been done that might be done elsewhere, both through foreign assistance programs and through wise domestic policies. We are interested in identifying the ways in which Thai leaders were able to utilize resources, either available domestically or through foreign assistance mechanisms, to build strong institutions and, especially, in how they have succeeded in sustaining and enhancing the institutions after the assistance programs phased out.

It is the premise of our study that while extensive training abroad has been an important, indeed essential, contributor to Thai institutional development, the national and institutional policies adopted by the Thais have been indispensable for maximizing the return on massive investments.

Background

Although respect for modern knowledge has been widespread in most developing countries, opinions about the means of acquiring and using it have changed frequently over the years. Virtually all serious attempts to modernize begin with a substantial investment in overseas education. Japan and Thailand both sent

large numbers of students abroad beginning in the final third of the nineteenth century for the same reason: to respond to military and commercial threats from Europe and North America.

Overseas education for a time plays a research-and-development role for a developing country; it is a primary source of new methods and technologies. Reliance upon the direct transfer of knowledge and techniques from industrial to developing countries has familiar hazards, however, and the necessity for field research and the adaptation of knowledge to local conditions has been recognized at least since Walter Reed braved Panama.

The discoveries of high-yielding varieties of cereal grains and of oral rehydration therapy (ORT) conclusively demonstrated the value of conducting high quality research on location in developing countries, but these successes for the most part occurred within the confines of research institutions controlled by scientists from abroad. The Rockefeller and Ford Foundations set up and ran the International Center for Improvement of Corn and Wheat (CIMMYT) in Mexico and the International Rice Research Institute (IRRI) in the Philippines before the Consultative Group for International Agricultural Research (CGIAR) shared the burden among a variety of donors, and the U.S. Navy supported much of the field research that culminated in the discovery of ORT at the Pakistan/Southeast Asia Treaty Organization (SEATO) Cholera Research Laboratory in Dacca.

A case could be made, perhaps, for the industrialized countries to conduct the bulk of the research needed on Third World food production and disease problems under some sort of international division of labor, but this would fail in practice even if it were somehow accepted in principle. The world's largest medical research budget, that of the U.S.National Institutes of Health (NIH), devotes no more than 5 percent of its funds for maladies primarily of concern in the tropics. Even if budgetary limits were overcome, understanding the social and cultural settings for illness can be as critical as mastering its biological aspects. Even simple and effective remedies require adaptation to fit the cultural and social context, in the case of ORT, for example, that of dealing with diarrheal illnesses.

The need for each country to have its own health research system is a recognized element of the World Health Organization (WHO) Alma Ata declaration calling for health for all by the year 2000. The role of research has recently been defined and affirmed by an international commission on essential national health research, and the case for creating indigenous capacity for analyzing and dealing with national problems in other fields is no less accepted. More broadly, the importance of research and development to the international competitiveness of any given country is not that it will lead to breakthrough discoveries, which are rare and not as highly associated with sustained increases in productivity as incremental changes. Rather, it is that research and development gives a nation the ability to adopt and adapt discoveries, technology, and innovations developed elsewhere in the world.

The most dramatic evidence for this view of research and development is that, even in the 1950s and 1960s, less than 40 percent of economically significant scientific discoveries and technological developments originated in the United States, but the United States was best prepared then in relative terms to make immediate use of discoveries and innovations wherever they originated. Now, many rich countries have the capacity to do the same, and the U.S. share of new discoveries has diminished as well.

Thus the fundamental reason for building research and development capacity in middle-income counties is that they will become increasingly able to access and adapt new discoveries and technologies—to make the small discoveries that lead to sustained increases in productivity and international competitiveness.

The development of local problem-solving capacities in health, agriculture, economics and other areas of national action would seem to be an obvious arena for international cooperation, and so it is, but just how this capacity can be created remains a challenge in many countries.The role of universities continues to be controversial among development strategists. Universities can be and often are remote from the realities of poverty and disease, expensive purveyors of higher education of doubtful relevance and merit.

Without suggesting that universities need be the primary research institutions in a country, or that Mahidol and Thammasat are the only successful universities in Thailand, the experience of these two institutions in developing high quality research and teaching capacities and the part played in their success by foreign assistance seems worthy of attention.

Why Thailand?

Thailand's economic and social success is particularly encouraging for other countries because the Thais have demonstrated that it is possible to succeed without massive external assistance or the discovery of oil riches. Thailand has benefitted from enlightened and effective foreign assistance in institution building from both private and public sources, as our study demonstrates, but foreign aid played a relatively minor role in the overall success of the economy.

By comparison with Taiwan, where U.S. aid averaged $10 per capita for many years and made up as much as 34 percent of gross investment, assistance in Thailand was seldom more than $1 per capita and averaged less than 1 percent of total investment. Whereas U.S. aid averaged 6.4 percent of Taiwan's Gross National Product (GNP) between 1950 and 1970, and was 10 percent in the initial years, in Thailand during that period it averaged 0.7 percent.[1]

The Thai economic achievement has not been as spectacular as that of Taiwan, Korea, or the other Asian tigers, Singapore and Hong Kong. Indeed, in 1965, Thai per capita income exceeded that of Korea, and in 1985 it was only a third of Korea's,[2] but the rate of growth has been impressive, relatively constant, and healthy in terms of diversification.

In the 1950s, when Thailand's national income accounts were first being estimated, its per capita income, like in many developing countries, was well under $100 per year. During the 1950s, the Thai economy grew by a respectable rate of over 5 percent annually, and this increased in the 1960s to an 8.4 percent annual average. The oil price shocks of the 1970s hit Thailand relatively hard, but the economy still grew by an average of 7 percent per year during that decade.[3]

Much of this early success was due to a continuous expansion of agricultural exports, some of which took a heavy toll on tropical forests, and import-substitution manufacturing. During the first part of the 1980s, oil and commodity price shocks set the economy back, slowing growth and leading to rising debt and austerity. In the second half the of 1980s, however, Thailand's performance has been spectacular, including a 40 percent annual increase in manufactured exports, a 30 percent annual growth rate in total exports, and an overall double-digit Gross Domestic Product (GDP) growth rate.[4]

The shift in export composition is particularly significant. The Thai economy was initially dependent upon a narrow range of primary commodities, chiefly rice, rubber, teak, and tin. In 1971, manufactured goods accounted for only 10 percent of exports, and as recently as ten years ago, primary products constituted two-thirds of exports. Now, over 60 percent of exports derive from manufacturing.[5]

A recent analysis by a team of economists at the Thailand Development Research Institute (TDRI) goes in some depth into the sources of the recent export-led growth, its effects on the economy, and prospects for its sustainability. The factors that caused this growth are of less interest to us here than those that did not. Contrary to what one might expect, neither increases in world demand for traditional Thai products nor a growth in foreign investment provides the explanation for the Thai success, although both were positive factors. Instead, the authors credit the Thai ability to take advantage of favorable domestic and international economic circumstances (such as slowing of the expansion of extensive agriculture, developing the manufacturing sector, producing a skilled workforce, and creating economic infrastructure) and responsive macroeconomic management (a reasonable exchange rate, responsible fiscal and monetary policies, etc.).

In other words, the Thai economic success over the years, and particularly recently, is homegrown. It is less the product of natural resource abundance, donor benevolence, or fortunate shifts in the terms of trade of its traditional products than of local abilities and sound policies. Our interest here is to learn what we can about how two universities contributed to the emergence of those local abilities and sound policies.

In the population and health sector, Thai accomplishments are no less outstanding. The rapid reduction in fertility rates accomplished in the course of three decades is regarded in the literature as a demographic revolution.[6] Annual population growth declined from a peak of over 3 percent in the early 1960s to around 2 percent at the end of the 1970s, and is expected to reach 1.6 percent by the end of the century.[7]

Similarly, the health status of the Thai people has improved greatly, as evidenced by available indicators of health status: life expectancy at birth, infant mortality rates, nutritional status of infants and children under five, and leading causes of death and illness.

Life expectancy at birth has increased by five years since 1965, and is projected to increase another five years, to over 65 for both male and female, for the generation that will be born after the year 2000. Infant mortality rates have dropped by half or more since 1965 to a national average of 45 per 1,000, although regional disparities persist. Leading causes of death have shifted over 20 years from diarrheal diseases, tuberculosis, and pneumonia to accidents, heart disease, and cancer. These statistics compare favorably with countries at the same and higher levels of per capita income.[8]

These achievements, too, have many fathers, including an unusually effective ministry of health, an outstanding population and family planning program, and strong medical education and research institutions. Although it is not possible or even desirable to try to allocate credit for improved health status among the participating institutions, it is more plausible to credit research and training institutions with success if their societies are doing well in the areas in which the institutions specialize than if they are not.

Nor are Thailand's successes in economic growth and health-status improvement cause for complacency. Income distribution is seriously skewed, particularly by region. Enrollment in secondary schools is unusually low. There are growing environmental problems and an AIDS epidemic. The point is not that all problems have been solved; it is that a solid institutional capacity for analyzing and dealing with problems has been created from a relatively rudimentary base in a remarkably short time. Overseas education and donor support for institutional development are part of the story; wise and fortuitous domestic policies are perhaps the larger lesson. Our task is to explain as fully as possible how institutional capacity was built, the conditions under which it might be replicated elsewhere, and what future linkages between Thai and U.S. institutions would make sense in the post-aid period.

Organization of the Chapter

The topic is, of course, unmanageable. But since our purpose is to learn what we can about how institutional research capacity was successfully created in Thailand with U.S. assistance, and what avoidable mistakes may have been made in the process, we invited two senior researchers and research administrators to discuss the evolution of their institutions.

The section that follows this introduction describes some of the mechanisms through which assistance contributing to research capacity building has been channeled to Mahidol and Thammasat Universities over the past 30 years and reviews briefly the important characteristics of the educational system and the educational policies that have affected these two universities.The descriptions are neither encyclopedic nor evaluative; they are meant to provide a backdrop for the sections of the chapter that follow.

The third section, by Professor Natth Bhamarapravati, former rector of Mahidol University since 1979, deals with health research in Thailand—from insights into the history, sustainability, and research efforts of university-based versus independent institutions, to current trends.

The fourth section of the chapter, by Professor Praipol Koomsup, vice president for academic affairs of Thammasat University since 1988, offers a perspective on the economic research capacity-building at Thammasat University, outlining the role of the Rockefeller Foundation.

The final sections of the chapter look ahead at the prospects for and challenges to the research and development capacity that has been built in Thailand, summarizes lessons from the Thai case that may be of use to other countries trying to strengthen their economic and health research systems, and discusses bilateral and international linkage mechanisms that will continue in the post-aid era—or that might need to be created.

SECTION 2: MECHANISMS OF COOPERATION AND THE STRUCTURE OF EDUCATION

Although, as Professor Natth informs us in the next section, Thai rulers established institutions of higher learning more than a century ago, the vast expansion of modern knowledge throughout the society in the past 30 years owes much to international cooperation. The training of thousands of Thais abroad under both public and private auspices, and foreign participation in building strong university institutions helped to remarkably transform an ancient society into a dynamic modern state.

During this pivotal period of institutional capacity building, a healthy interaction prevailed between donor organizations and Thai educators at the national level and in the universities. Rapid university development influenced educational structure and policies at all levels, and sound local policies were instrumental in sustaining and enhancing the research and teaching capacities developed with international assistance.

Initial Mechanisms of Cooperation

In choosing to look at the development of institutional research capacity in Thailand, we are fortunate that so much evaluative literature already exists. Among the sources drawn upon most extensively for this section are the following:

1. *Thailand and the United States: Development, Security and Foreign Aid,* by Robert J. Muscat. This book, published in 1990 by Columbia University Press, contains a full account of the U.S. contribution to Thai development through the development assistance program.
2. "Thailand," a chapter from an unpublished review by the late James Coleman of the University Development Program of the Rockefeller Foundation, written in 1984.
3. "Thailand: Evaluation of United States Agency for International Development (USAID)'s centrally-funded science and technology grants program," prepared for USAID by William Krebs, Anthony San Pietro, and Jaroon Kumnuanta, in June 1989.
4. "Mid-Term Evaluation of the USAID/Thailand Science and Technology for Development Project (STDP)," prepared for the STDP, Ministry of Science, Technology, and Energy of the royal Thai government by Ronald Black, Albert B. Van Rennes,Burapa Atthakor, and Suchitra Punyaratabandhu-Bhakdi, in March 1990.

The University Development Program of the Rockefeller Foundation

For nearly two decades beginning in 1963, the Rockefeller Foundation invested substantial resources in seven universities on three continents, certainly the most ambitious higher-education development program by a private institution since the foundation's major effort at the Peking Union Medical College. Three of the seven beneficiary institutions were in Thailand; they received a total of $28 million, or 24 percent of the total expenditures.

The foundation didn't intend to invest in three Thai institutions; it held to the notion that synergistic gains were available from the creation of strong faculties of agriculture, life sciences, humanities, and the social sciences in a single institution. Its officers tried in vain for a year and a half to bring about the amalgamation of Kasetsart, the University of the Medical Sciences (which became Mahidol in 1969), and Thammasat into a single university. The circumstances in Thailand did not meet the University Development Program (UDP) criteria in other ways as well: Sound and effective academic leadership with which to cooperate was not evident at two of the institutions, disciplinary strength was lacking in key areas of concentration, and, in two cases, no other donor was available to share the financial burden.

In the end, the foundation overrode its own misgivings and made major investments in the Thai institutions. In part, perhaps, its flexibility reflected the long history of the foundation in Thailand, extending from a campaign against hookworm and environmental sanitation begun in 1916, through nine years of support for the Siriraj Medical School at Chulalongkorn University beginning in 1923, to continuing support for agricultural research and education at Kasetsart University begun in 1955. Thailand's proximity to the turbulence in Indochina and the People's Republic of China and its pro-Western orientation may have added a geopolitical consideration, but that hardly seems necessary to justify the choice.

Interestingly, when Coleman and others came to review and evaluate the UDP investment in Thailand, they found that solid academic leadership was, in fact, present when the program started, and that the absence both of other donors and of disciplinary traditions on which to build were factors contributing to the program's success. Starting nearly from scratch at Thammasat and the University of Medical Sciences (Mahidol) had its advantages.

The Faculty of Science, Mahidol University

The initial Rockefeller Foundation commitment at Mahidol was to train preclinical and basic scientists, not physicians, although the end result hoped for was better-trained physicians in other Thai schools. When the program began, it was unrelated to a medical school, but in 1966 a faculty of medicine was established next door to the faculty of science at Ramathibodi Hospital. Even within the foundation, there was debate over whether the American model of research tied to medical schools was appropriate for a developing country institution such as Mahidol.

When the faculty of medicine at Ramathibodi was established, the Rockefeller Foundation expanded its commitment to include responsibility for introducing community medicine into the curriculum. In a sense, the foundation was then straddling the appropriateness issue by supporting both the development of a strong science faculty in the Western tradition and the practice of community medicine in rural areas.

The Rockefeller Foundation's investment in Mahidol was massive for its day, as it would be even now. Initially, a Thai dean selected 30 promising candidates who were awarded doctoral fellowships at American universities; 27 of these completed their training. The number of scholarships awarded to prospective Mahidol faculty members by the foundation eventually reached 80, but only the original 30 were for the life sciences. Six went to other departments in the faculty of science, 22 to nursing, 10 to the Ramathibodi medical faculty, 5 to the Institute of Population and Social Research, and 7 to social sciences and the humanities.

While the first group of scholars was in training, 22 members of the foundation field staff were assigned to six life-science departments. Those selected to head departments were asked to make a commitment to stay until qualified Thai scientists were available to replace them. In all, the 22 scientists served a total of 120 years in Thailand; 5 were acting department heads for periods of six to nine years until the return and full integration of Thai successors.

The foundation spent twice as much on resident staff as on foreign training, which might be considered disproportionate. But Coleman found their contribution to setting the pattern for teaching courses and organizing curricula to have justified the heavy investment. By 1975, the academic staff of Mahidol was entirely Thai, and by 1978, all of those who had returned were still in their departments, three as chairmen. They were highly productive, world-class scholars, averaging as a group more than 50 papers per year in international professional journals.

The cost of the Rockefeller Foundation effort at Mahidol under the UDP was $13 million, around 10 percent of the total program worldwide. In addition, the foundation continued to support research at Mahidol at an annual rate of $80,000 after the UDP phased out in the mid-1970s. In today's dollars, the investment would be equivalent to slightly over $40 million, based upon the consumer price index as reported in the *Statistical Abstracts of the United States.*

The achievements of the program have been impressive. As planned, the faculty of science serves as a national center for graduate studies and cadre formation in the life sciences. Coleman found that a substantial majority of Thai scientists serving in provincial Thai universities received their graduate training in life sciences from Mahidol. Research output remains prodigious, and the faculty attracts funds from more than 20 international funding agencies.

The one major objective not attained is that of establishing Mahidol as a regional center of excellence in the life sciences for Southeast Asia. After the UDP phased out, external scholarships were abolished and Thai increasingly became the language of instruction. The few non-Thai students in the faculty decreased to none.

Thammasat University

Although Thammasat University is Thailand's second oldest, the Rockefeller Foundation program there, which came to be centered on the faculty of economics, also began largely from scratch. When the program

began in 1964, there were almost no full-time faculty members. The institution was, however, already in the midst of a transition from an open-admission people's university to a quality institution with reduced enrollments and higher standards under the leadership of a dynamic secretary general.

As with Mahidol, the Rockefeller Foundation was the only donor on the scene for much of the life of the program. The initial approach to institution-building differed from the Mahidol case, however, in that the foundation had no predetermined disciplinary preferences. Fellowships were awarded to the most promising candidates from wherever they could be found in the humanities and social sciences. No step-by-step university development plan was initially devised, nor were field staff appointments made to coincide with overseas fellowships. Some of the early fellowship awardees later became noted in the fields of drama, poetry, and the philosophy of science. Many became leaders in the governance of the university.

To some, Thammasat may have been a surprising choice for work in humanities and the social sciences. The older Chulalongkorn University was more prestigious, and Thammasat had a reputation for social commitment and volatility, having often been at the center of political activity, which might otherwise have put the foundation off. Foundation executives decided, however, that Chulalongkorn was too traditional and conservative to respond well to external stimuli, and Thammasat's role in producing a majority of the country's higher civil servants and teachers in other Thai universities made it a particularly attractive institution with which to work.

Not long after the program commenced, it gravitated increasingly towards a focus on the faculty of economics, which within five years did become its singular area of concentration. The main reason was the appointment of Dr. Puey Ungphakorn, former governor of the bank of Thailand and a charismatic intellectual, as dean. Dean Puey had a clear vision of the future of his faculty, and he worked closely with Rockefeller Foundation field staff to plan and schedule a long range program for carrying it out.

The plan had five chief objectives that were tackled in sequential, but overlapping, stages: to dramatically improve the quality of the undergraduate curriculum in economics; to establish a master-of-economics program in English; to engage the faculty in policy-oriented research, both to enrich its teaching and to contribute to national public-policy formulation; to strengthen the university as a whole through the leadership of the faculty; and to make the graduate program into a regional resource.

First priority went to accelerated staff development; good candidates needed to acquire fluent English and a grounding in economic principles before being sent abroad. The foundation consequently brought in a number of resident staff to strengthen the undergraduate economics program and set up an English language program to serve all Thai universities preparing staff for overseas training. Economist field staff gradually built up to a peak of nine in 1971–1972, and then declined fairly sharply, phasing out entirely in 1981. A total of 64 person years were devoted to the economics faculty, with 14 serving in the English language project and 9 more in noneconomic social sciences and the humanities.

The issue of the relevance or appropriateness of the curriculum was complicated in the case of economics, because neither the expatriate field staff nor the returning Thai Ph.Ds knew much about the real economic conditions and problems of Thailand. This lack added to the motivation of faculty members to engage in applied research and the development of indigenous teaching materials. In the later years of the program, the Rockefeller Foundation supported research through the Thai studies program (Thai Khadee), the economic research unit, a political science research center, and a university-wide research institute.

Most of Dean Puey's and the foundation's program objectives were achieved, although some more so than others. The undergraduate curriculum was upgraded until it was sometimes under fire for being too rigorous, and hence elitist. But returning Thai scholars affirmed that it was on a par with that offered in the institutions where they received their doctorates. The M.A. program in English, the first full-time, graduate-level program in a Thai institution, produced high quality people and a good source of economic research materials resulting from second-year theses. Some Rockefeller Foundation staff anticipated a natural decline in the standards of the program as field staff departed and the availability of scholarship funds diminished, but later evidence indicated that the expected decline did not occur.

The institutionalization of the faculty's applied-research activities was more in doubt at the time of the Coleman evaluation, but has since gained in importance. Among the problems were noncompetitive salaries and rigidities concerning the allocation of paid time for research, apart from the economic research unit. No special endowment to supplement salaries was made available by the government as it had for Mahidol scholars, with the result that good economists could earn five or six times more than their university salaries in the private sector. In addition, political turbulence in which Thammasat staff and students were deeply involved racked the campus in 1976, leaving a residue of government suspicion of the purposes of research and increased faculty caution in undertaking it. The upheavals also led to the expulsion of Dr. Puey, then rector of the university, from the country.

Opinions were divided as to whether the administration of the university improved through the economics faculty's example, but Dr. Puey's selection as rector in 1974 undoubtedly led to the further application of the faculty's experience. The aspiration to make the faculty a center of excellence for Southeast Asia failed to be realized for some of the same reasons that kept Mahidol from that role.

Kasetsart University. The third leg of the UDP in Thailand was support for the development of the agricultural university, Kasetsart. Unlike Mahidol and Thammasat, the Rockefeller Foundation was not alone as the principal donor to this institution; it had received substantial United States Agency for International Development (USAID) support since 1952. Moreover, the Rockefeller Foundation itself had supported activities at Kasetsart since 1955 under its Conquest of Hunger program.

The foundation made major contributions to staff development and to the quality of instruction through long-term, field-staff assignments, similar to Mahidol and Thammasat. But one function it undertook differed from other cases and deserves special mention. One senior field staff member, a former president of an American land-grant university, served as vice-rector for development for four critical years during which a new Kasetsart campus was planned and a World Bank loan negotiated. The loan not only covered campus-development costs, but also funds for graduate study abroad for more than 100 Thais drawn from all faculties of the university. This was a case of what foundations think of as leveraging: the investment of a relatively small sum to influence the quality of the application of much larger sums. The concept is, understandably, more popular with the leverager than the leveragee, in this case the World Bank, but it is one to which we return in the final section of the chapter when we consider the need for new mechanisms for cooperation.

To conclude this abbreviated account of an extraordinarily successful exercise in institution-building, it is worth noting the flexibility and persistence that marked the effort. Not only did the foundation override some of its predetermined criteria in selecting these Thai institutions for assistance, it did not pull out when things went seriously awry.

On two occasions, in 1971 and 1976, military coups occurred, the latter involving the killing of students, the intimidation of faculty members, and the forced political exile of the Rockefeller Foundation's close and esteemed collaborator, Dr. Puey. On another occasion, an experimental, rural-development project—designed to involve the three universities and the foundation in a comprehensive interdisciplinary effort and to expose the students to concrete development problems—was abruptly terminated by the government after the military coup of 1976. The foundation did, in other countries, abandon university programs under adverse circumstances where eventual success was not as legibly written on the wall.

Even more important than the willingness to persist despite adversity was the initial recognition that building strong institutions would take 12 to 15 years—and the ability to plan for a program of that duration.

The USAID Program

Training. USAID and its predecessor organizations have been active in Thailand since 1951, and the experience must be counted among their most successful. The depth and breadth of the assistance program could not be captured in a brief treatment such as this. But fortunately, the recent book by Professor Robert Muscat provides an excellent account and analysis of the achievements of the program and of the Thai institutions it was designed to assist. The follow-

ing information was derived primarily from the Muscat book. (See page 113.)

From the outset, the foreign-assistance program emphasized training, much of it in the United States and a sizable proportion at the graduate level. Our study is concerned with a more narrow focus, primarily the strategies for developing indigenous research capacities in the fields of health and economics at Mahidol and Thammasat Universities. It is worth noting in passing, however, the extent to which senior Thai academic, government, and private sector figures have been exposed to American education. The significance of their studies, for our purposes, is that they helped to create a receptive environment for change, including a willingness to accept and act upon research results.

Overseas training began with 14 participants in 1951 and 77 in 1952, reaching cumulative totals of 8,000 by 1970 and nearly 11,000 by 1980. About a quarter of these people were on long-term courses of study. The perceptible slowdown in numbers sent abroad in the 1970s was due primarily to the increased capacity for offering high-quality education and training in Thailand. But it also reflected changing emphases in the foreign-assistance program towards activities perceived to affect more directly the basic human needs of people in recipient countries.

Interviewing Thais in business, government, and academia, Muscat found near unanimity in the belief that training has been the most important contribution of the U.S. aid program to the country's development. In 1986, The Thai-American Technical Cooperation Association determined that, of 411 senior administrative and decision-making officials in the government (excluding military and security-related positions), 162 had been participants in U.S. official overseas-training programs. This proportion is doubtless far short of the total number who received American training. In addition to Rockefeller Foundation fellowships for post-graduate study in the United States, which totalled 378 between 1951 and 1985, the Ford Foundation awarded 111 fellowships during this period, the Population Council 43, and the Agricultural Development Council 38.

Dwarfing all sponsored education in U.S. institutions, privately financed Thai students comprised about 90 percent of the Thai student body in the United States from the mid-1950s to the mid-1970s. According to statistics compiled by the Institute of International Education (IIE), Thai students have numbered around 6 to7 thousand per year in the United States since the mid-1970s, comprising about 2 percent of the total foreign student population. Most of these are in undergraduate institutions.

To put this massive exposure to foreign training into perspective, it should be remembered that virtually no graduate education was available in Thailand in the 1950s, and as recently as 1967, Thai institutions were graduating only about 150 masters-level students per year, a third of them medical. The ability of the Thai society to accept this massive foreign exposure, to put the technical knowledge to good use and not be seduced or overwhelmed by it, is an extraordinary testament to the strength and resiliency of the Thai culture. Almost no Thai participants failed to return home after their training, and dependency upon foreign institutions did not occur, as evidenced by the rapid decline in numbers going abroad when high-quality graduate education became available in Thai institutions.

Education Structure and Policies

As the Rockefeller Foundation UDP was winding down, and USAID and other international donor support for overseas graduate training began to decrease, important changes in the Thai educational structure and policy were made that had the effect of protecting and enhancing institutional capacity. (Institutional policies at Mahidol and Thammasat were equally, if not more, important; they are described in the third and fourth sections of the chapter.)

The overall structure of Thai education can, for our purposes, be summarized briefly as follows: Government is the principal provider at all levels; primary enrollment through grade six is nearly universal; and secondary education enrollment is bimodal—high in cities where high-quality schools are located, very low in rural areas where most people still live and where the quality of secondary schools is often poor. Low rural enrollment presents serious problems of equity and trainability of future labor. It also limits the pool of students from which the universities draw their students.

Government policies on the structure of higher education and overseas fellowships helped to capture and retain the gains of the period when international cooperation was at its height. Currently, less than 20 percent of all students enroll in the highly selective and highly subsidized public universities—the so called closed-enrollment universities—including Thammasat and Mahidol. Another 10 per cent enroll in highly selective and expensive private universities, and 70 percent or more of all students enroll in open-enrollment universities, which charge low fees and require only completed secondary education for admission.

This structure developed in response to the strong social demand for places in higher education that began in the early 1970s, when finances constrained the expansion of the existing universities. They would have required more land, new buildings, many new faculty members, much larger classes, and money to subsidize larger numbers of students. (Student fees in the closed universities cover only from 6 to10 percent of recurrent costs—an issue to which we return later in the chapter.) University budgets for faculty research, already limited, might well have disappeared.

The solution and structure that emerged was to close or severely limit enrollment in the existing universities, and to establish two large, open universities with very low unit costs to respond to social demand. Ramkhamhaeng University is a Sorbonne-style institution in Bangkok, offering degrees in the humanities, social sciences, business, and law with huge classes (there are overflow rooms with TV monitors) and an enrollment of over 300,000 mainly part-time students. By the measure of gross enrollment, Ramkhamhaeng may be one of the largest universities in the world.

The second institution, Sukhothai Thammathirat Open University (STOU), is a distance-learning institution serving mainly employed adults via broadcast television, correspondence-course materials, and decentralized examination sites all over the country. Gross enrollment in STOU has been about 100,000 students.

This structure has protected—and even enhanced—the quality of the closed universities in three ways: They have had their pick of the increasing number of students sitting for the entrance exams; they have been able to proceed with faculty development and upgrading without having to contend with what would otherwise have been huge increases in enrollment; and university budgets to support research have been protected. Of course, there have been negative consequences for the lower levels of the education system and on equity of access to the closed universities. Recently, enrollment in the closed universities has begun to grow; but the equity concerns (and concerns about prospective shortages of graduates in critical fields) remain. Still, unquestionably, this response to the rapid increase in demand for places in higher education in the 1970s protected and increased the quality of the university capacity built in the earlier decades.

The other policy that had a similar supporting effect was government policy on fellowships for overseas study. As high-quality M.A. programs were developed (such as the Thammasat program in economics), the government, in its negotiations with bilateral and multilateral donors, requested that fellowships in these fields not be given for M.A. training abroad. Thus, the best Thai students, instead of competing for the fellowships for study abroad, competed for admission to the local programs. First-rate students further enhanced the quality of the local graduate programs. Available fellowships in a given field were then devoted to doctoral study abroad.

Recent Mechanisms for Cooperation

The continued vitality and excellence of institutions such as Mahidol and Thammasat, after the withdrawal of most external funding, allowed the donor community to support imaginative programs for further developing and utilizing their research and teaching capacities. A number of innovative mechanisms for expanding the contribution Thai universities make to their society have resulted.

USAID Transition Program

By 1983, the assistance program in Thailand was justified more by its proximity to the continuing turbulence in Indochina than by Thai poverty, and the USAID mission director undertook a study of future options for the program. Lengthy interviews with between 40 and 50 prominent Thais revealed their opinion that the most useful roles for USAID in the future lay in education and manpower development, science and technology, management, public–private

cooperation, and agriculture. They regarded the United States as a leading source of advanced technology and as being more open to sharing it than most other sources. In contrast, they did not think that the alleviation of poverty was an area in which U.S. aid had particular relevance or leverage.

Assistance programs don't change directions overnight, nor are the priorities seen from the field always persuasive in Washington, D.C. But in the time between the options report and the shutdown of the USAID program in October, 1991, the program moved a considerable distance in the directions favored by the Thai respondents. Two substantial initiatives can be briefly mentioned here: Emerging Problems of Development and Science and Technology. In addition, the mission effectively encouraged and supported participation in centrally funded, scientific research competitions by Thai scientists.

The Emerging Problems of Development program was scheduled to run from 1985 to 1992 with an authorized funding of $18 million. Its intent was to identify significant problems where policy choices would be required and to stimulate high-quality research and analysis of them. Some advanced professional training was funded, but the largest single allocation went to support policy research at TDRI, which in turn became a major funder of policy research by economists on the Thammasat faculty.

The emerging problems program also instituted a process that solicits the policy concerns of government agencies, invites proposals, and funds studies, with decisions jointly taken by the Thai Planning Board (NESDB), the Department of Technical Cooperation (DTEC), and the mission. Studies and pilot activities funded under this program have led to major new projects in science and technology and in natural resources and the environment.

The science and technology program was also intended to last from 1985 to 1992 with an authorized USAID budget of up to $35.4 million plus $15 million in Thai funding. A semiautonomous science and technology development board (STDB) under the Ministry of Science, Technology, and Energy has been created to administer the funds. On it sit businessmen, scientists and government officials. The objective of the STDB is to improve the utilization of Thai science for economic activities. Apart from the medical field, scientific capability is perceived to be underutilized by private industry, and resources devoted to research by the private sector have been low by comparison with more advanced economies in Asia and elsewhere.

The STDB seeks to strengthen the technical infrastructure supporting industry by improving industrial standards, testing, and quality-control capabilities. It also seeks to promote research and development on commercially promising products and to improve access to international technological information. STDB can also support studies on policy constraints in these areas. Technical assistance to STDB is supplied through the National Academy of Sciences.

What distinguishes the science and technology project, in Muscat's view, is its focus on applications in the private sector, its concern for science and technology policy as a broad developmental issue, and its objective to help fix deliberate attention on science and technology in effective institutional settings. For the purposes of our study, what distinguishes STDB is the support it offers for applied research and development in the areas of bioscience and biotechnology, further strengthening the contributions of Mahidol, Kasetsart and other universities to Thai development.

Science and Technology

In 1979, President Carter announced the establishment of a foundation that was to become the Institute for Scientific and Technological Cooperation (ISTC). The idea was to take responsibility for research and technological collaboration out of USAID, where it fared poorly in the atmosphere created by the basic human-needs orthodoxy, and place it in a new federal institute that would facilitate relationships between the U.S. scientific community and institutions in developing countries, particularly the middle-income countries no longer served by the foreign-assistance program.

The announcement proved premature.Although the idea was hailed as a breakthrough by scientists in Asia, Africa, and Latin America, the U.S. Congress had little enthusiasm for creating another federal agency. The ISTC was authorized by the congress, but funding was rejected by the appropriations committee of the senate. As a compromise, the functions designed for the new agency were vested in USAID, which set up the office of the science advisor to administer the resulting

Program in Scientific and Technological Cooperation (PSTC).

PSTC has been administered quietly but effectively since being launched in 1981, but research capacity-building has not moved to center stage in USAID as a whole. Recent policy pronouncements stress building democratic processes, strengthening the family, and partnership with the private sector, but not building the problem-solving capacities of nations through universities. The budget of PSTC has declined from $12 million in 1981 to around the $8 million level, not accounting for inflation.

For Thailand, and Mahidol University in particular, however, the PSTC has been a boon. Thai scientists have won 53 grants over the years, more than twice as many as any other country. Indeed, Mahidol University alone has captured more grants than any country's total other than Thailand's.

Mahidol's success is testimony not only to the quality of the institution, but also to the emphasis placed by the USAID mission in Bangkok on strengthening scientific and technological capacity in the transition program. Perhaps the most effective action by the mission for PSTC was the appointment of a Thai scientist, Dr. Jaroon Kumnuanta, to its staff to help scientists prepare and submit proposals to the program. The year after his appointment, Thai scientists won 12 awards, triple the number of the previous year and a quarter of all PSTC grants awarded that year. PSTC soon began attracting upwards of 100 proposals per year, and the science advisor had to ask the mission to limit submissions to 50 in order to give the rest of the world a chance.

Another international research competition funded through the Office of the Science Advisor was administered by the Board on Science and Technology for International Development (BOSTID) of the National Academy of Sciences (NAS). The BOSTID program initially concentrated on six research areas chosen by a committee of distinguished scientists from the United States and developing countries. Special workshops on each topic were held to determine what research was needed and which developing-country institutions were best able to do it. Proposals were then solicited from those institutions and reviewed and revised before funding. The BOSTID program lapsed in the late 1980s due to a reduction in funding available to the science advisor.

A third international research competition funded through the Office of the Science Advisor with which Thai institutions have impressive success is the U.S.-Israel Cooperative Development Research Program (CDR). This program seeks to increase the access of developing countries to Israeli scientific, technical, and development expertise. It funds joint research on significant development problems by Israeli and developing country scientists. Proposals are subjected to objective peer reviews and awarded on a competitive basis.

By the end of 1988, when the impact on Thailand of the three centrally funded research competitions was evaluated, PSTC had made 40 grants to Thai institutions totalling $5,622,164; CDR had made 20 grants totalling $3,094,098; and BOSTID had made 11 grants totalling $1,547,970. Of the total funds available worldwide, Thailand received around 20 percent.

As might be anticipated, the findings of the evaluation were highly positive as reflected in the following summation:

The centrally funded projects have been producing scientific information that is of immediate relevance to development in Thailand as well as other developing countries. The overall quality of research is high, with few exceptions. The impact of these grants on Thai institutions, primarily the universities, is substantial: strengthening their capacity in science, increasing their ability to attract and hold qualified staff, serving as magnets to talented students, equipping their laboratories, improving research management, and expanding institutional capability to acquire funding for research from other sources.

Centrally funded research programs, while strengthening USAID's overall impact in a country, are not free goods for the local USAID mission. The Thai mission devoted two person-years of staff time annually to centrally funded research. The USAID mission was due to phase down to one or two persons on the embassy staff in the early 1990s—even before the recent coup forced a more abrupt cessation of activities—and the PSTC and CDR responsibilities will probably be transferred to the STDB, assuming it survives the funding cuts. For other missions, where science

and technology are not prominent elements of the program, the burden of supporting and monitoring centrally funded projects is often considered to be onerous.

The National Epidemiology Board of Thailand

The rapidly changing requirements for health services in Thailand, resulting from economic growth and national accomplishments in combatting infectious diseases and negotiating the demographic transition, place a considerable burden on policy makers in the ministry of public health. The pace of change puts a premium on the ability of the health system to identify priority problems, to mobilize resources, and to assess the effectiveness of alternative courses of action.

Recognizing the potential value of the knowledge and experience of medical scientists in the universities for analyzing national health problems, the Ministry of Public Health (MOPH) set up the National Epidemiology Board of Thailand (NEBT) in 1986 as a mechanism for mobilizing academic resources for public health purposes. The idea evolved from discussions engaging officials of the MOPH, Thai academicians in the health field, and a representative of the Rockefeller Foundation. The foundation provided initial funding for the activity.

The NEBT consists of a board of trustees, the national epidemiology board, an executive committee of the board, five program units, and an administrative section. The National Edpidemiology Board is the policy-making body, guided and supported by the board of trustees; 20 senior Thai academicians and health executives serve on it. The board of trustees consists of 35 persons, most of them serving *ex officio* as representatives of departments of the MOPH, universities, and bilateral and international donor organizations interested in public health activities.

The executive committee is the key body for identifying priority issues and formulating plans of action. It consists of ten qualified health professionals who utilize a technical advisory group and special problem-oriented commissions to assist in information gathering, planning, and analysis.

The four main program areas of the NEBT, each of which is the focus of a scientific commission serving the executive committee, are:

- communicable disease control;
- noncommunicable disease control;
- environmental health; and
- health systems research.

In addition, an Office of Special Programs is available to deal with issues not covered by the four commissions.

This rather elaborate structure is remarkable for its ability to link sources of technical information with policy-making executives and those who control domestic and external resources available for dealing with health issues. It also encourages a broad problem orientation that transcends disciplinary and departmental boundaries.

The creation of the NEBT has facilitated much closer interaction between decision makers in the MOPH and leading academicians, as well as a joint approach to problems. For example, the Commission on Environmental Health determined that there is a high incidence of water-borne diseases despite the increasing availability of safe water supplies and latrines. The NEBT provided research grants to examine the issue, considering sociocultural and behavioral factors as well as environmental and medical ones. The annual meeting of the NEBT offered a forum for policy makers and academicians to discuss research findings and recommendations and to jointly consider further action.

The opportunity for academicians to interact with experienced health workers from the field, created through the scientific working groups sponsored by NEBT, has proved beneficial in fostering interdisciplinary approaches to complex problems. Combining behavioral and social-science research with clinical and biomedical approaches has increased the applicability of research results in some cases.

A number of cases can be cited to demonstrate the value of the NEBT to the ministry. NEBT was instrumental in organizing meetings of experts to consider means of preventing encephalitis. The groups designed appropriate educational materials and vaccine schedules for use by the ministry, which used the recommendations in conducting a large-scale vaccination program in the northern provinces.

NEBT also initiated sentinel surveillance of HIV infections in 14 provinces, a system that has been adopted

and expanded by the ministry as its major source of information on HIV transmission.

In another case, NEBT worked closely with the ministry to design an action-research program on ways of controlling iodine deficiency diseases. The National Medical Research Council supplied funding for studies, and the NEBT supported a national seminar on these diseases, which was organized by the nutrition division of the department of health and which led to changes in strategies and programs in this field.

Conclusion

Our principal focus in this chapter has been on the external assistance strategies and local policies that help to explain the emergence of two remarkably successful research-oriented universities in Thailand. Our brief review of two other institutions established in Thailand with external assistance, the STDB and the NEBT, is intended to illustrate the value of creating special mechanisms for linking university research capacities in the health field to both private- and public-sector agencies dealing with health problems. This institutional articulation is particularly well developed in Thailand and has added to the strength of the universities involved.

SECTION 3: HEALTH RESEARCH IN THAILAND

Background

The history of health research in Thailand could be traced to the beginning of modern Thai medicine in the reign of King Chulalongkorn more than 100 years ago. King Chulalongkorn, in his effort to modernize Thailand, established three institutions that later became institutions of higher learning. This was based, to the monarch's credit, on his perception of the needs of the country at that time.

The institutions were the military cadet school, which later became Chulachom Klao Military Academy; the royal page school, which trained civil service officers of both the administrative and judicial systems and later evolved into Chulalongkorn University; and Siriraj Hospital, which four years later became the Royal College of Physicians, and subsequently the Faculty of Medicine, Siriraj Hospital.

It was clear that the three institutions were not created to pursue purely scholarly activities and the new frontiers of knowledge. Their objectives were to first provide training for needed manpower, and, second, to transfer new knowledge and technology to defense, the administration of the country, and the provision of medical care to the population. It would take many more years, until around 20 years after World War II, for the institutions of higher learning to begin to pursue the third function, research, in earnest.

As far as health research is concerned, we have discussed how the activities of the Rockefeller Foundation with the medical school at Siriraj Hospital and later at the faculties of science and medicine at Ramathibodi Hospital (all under Mahidol University) influenced the evolution of health research in a most significant manner. The foundation helped in the upgrading of the Sirraj medical school to the status of a university after the end of World War I. It contributed to the strengthening of the science courses in the premedical curriculum and the basic medical courses in the preclinical curriculum. It was about to help with the strengthening of the clinical departments for clinical specialty training when World War II began.

The foundation started its activities again in 1963 at the faculty of science of Mahidol University by sup-

porting the local M.Sc and Ph.D programs in basic medical sciences. Two very unusual features of this program were the mobilization of a sizeable number of visiting professors in each of the preclinical science departments and the giving of a rather large number of scholarships to Thai students for overseas study for advanced degrees. The first attempt of the foundation and Mahidol University was to recruit students with high potential in science into the new medical degree program at Ramathibodi Hospital's medical school. These students were expected to complete four years of premedical and preclinical courses at the faculty of science first. The hope was that some of these students would opt for a Ph.D degree program in the basic medical sciences rather than continuing their study for two more years in the medical school for their medical degrees. This, however, did not happen. Most students went on to complete their medical degrees. A few did return for Ph.D degrees after they got their M.D. degrees. The university and the foundation had to shift the emphasis to admitting nonmedical applicants to these graduate programs instead.

At this juncture, the establishment of the new faculty of medicine, Ramathibodi Hospital, helped foster the orientation of the medical education toward community medicine. This direction led to an increasing dialogue between the ministry of public health and the medical schools. It paved the way toward the beginning of the era of health-service research, which would emerge as an important activity paralleling the biomedical research thrust of the country.

The rather rapid phasing out of Rockefeller Foundation support seemed to be an inevitable outcome of several mitigating circumstances, and may have resulted in some weakening of the efforts to strengthen the biomedical research capacity of the country. This, in retrospect, may also be considered a blessing in disguise. The Thais had to face the situation squarely and at a time when the country itself was faced with many problems, mainly political, social and foreign threats. It is apparent that they were reasonably capable to maintain the momentum in the face of many difficulties.

What are the major issues that have contributed to the steady progress in health research involving biomedical and health service research since the middle of 1970? The following represents some of the conclusions reached by a Thai who has been involved closely with the events at several levels in the hierarchy of the university and who still remains a practicing researcher.

The expansion of national capacity for biomedical science that is closely related to the capacity for biomedical research is an essential component of the increase in capacity for health research as a whole. The capacity for health research incorporates facilities and equipment as well as research manpower. The decision to increase this capacity through the development and expansion of the universities in Thailand 20 years ago was extremely important. Some other countries decided to increase capacity through research institutions, which yielded reasonable progress in some cases, but in many others turned out to be rather unsatisfactory.

In the late 1960s, there were three medical schools in Thailand, with 18 departments of basic medical science and around 200 faculty members. When the Rockefeller Foundation launched the faculty of science program, six new departments were added. By the end of the 1970s, two new provincial medical schools and the armed forces medical school were established, and 18 new basic medical sciences departments were added. At the end of the 1980s, two new government medical schools and one private medical school were established. These added another 18 departments of basic medical sciences to the capacity pool.

Two other components of biomedical sciences capacity are the Ministry of Public Health and the armed forces. The capacity of the latter is mainly in the armed forces medical school. The Ministry of Public Health tried to expand its capacity, especially through its FDA-related functions, but with relatively little success. An example could be made using the Virus Research Institute of the ministry, established in the 1960s with the support of the Japanese government. By the end of 1980s, practically all virologists trained in Japan under the early agreement had retired, and very few young virologists were recruited to replace those who left. There probably are fewer professional virologists in 1991 than in the 1970s. Thus, university-based biomedical units appear to be central to the progress of biomedical research during these 20 years.

The expansion of this capacity, as far as manpower is concerned, was partly achieved through the overseas

training of some scientists but was largely due to the strong surge in graduate training in the preclinical sciences at Mahidol University. These programs in the years 1970–1990 have produced about 918 M.Sc's and 92 Ph.Ds.

The expansion of biomedical research manpower could not be achieved by simply asking the government or other agencies for support on an open-end basis. It was accomplished by the creation of real demand for biomedical manpower through the establishment of new medical schools. Mahidol University initiated the planning of two medical schools, one in the northeast and one in the south, shortly after the opening of the medical school at Ramathibodi Hospital that was linked closely with the Rockefeller Foundation. Questions were raised, legitimate ones at that, in the light of the difficulties experienced in the development of the medical school in Chiengmai, about the possible shortage of preclinical sciences teachers for these two schools.

Mahidol University gave the assurance that, through its new graduate programs at the Faculty of Science, it could provide the necessary biomedical scientists for the two schools with no difficulty. This, as will be further discussed, provides an example of the importance of the creation of demand for manpower, based on the real needs of the country. The successful outcome of this proposal led first to the expansion of biomedical facilities and later to the enhancement of biomedical research capacity.

It was important to couple research capacity with strengthening of the graduate program. In other words, graduate programs are made to fulfill two major objectives: to provide new manpower, and to enhance research capacity through the research of graduate students meeting their thesis requirements. This kind of research is usually performed under the supervision of faculty members. Therefore, directly or indirectly, research performed by graduate students forms a significant input to the research capacity of the country. Strengthening and promoting biomedical graduate programs was one of the most crucial and fruitful decisions made by Mahidol University in the mid–1960s, influencing significantly the increased capacity for health research of the country.

Another point to be considered in establishing local graduate programs is the quality of the programs. Indigenous graduate programs may result in some savings, especially in faculty and student costs. However, equipment, supplies and information have to come from outside the country, and this may be costlier in the long term, considering everything, than sending students abroad, if the programs do not produce graduates who are competitive internationally. This points out the wisdom of the program of the Rockefeller Foundation at Mahidol University. It aimed uncompromisingly toward global standards, a point controversial at the beginning. Some people raised the issue whether it was feasible, or even desirable, to launch an M.Sc. or Ph.D degree in the life sciences in Thailand. Some pointed out the high cost, in comparison to other local programs, of the education of scientists and physicians under this project. Others expressed doubts about sustainability of the project. It is now clear to many that there is only one standard of science and technology: a global standard. The orientation between the pursuit of science and technology by scientists in the developed and developing countries may be different in many aspects, but performance will have to be of comparable standards. The use of English in graduate teaching, research writing and publication with peer review in good international journals, and competition for research support are essential ingredients that have to be nurtured in the Thai biomedical research context. Sustainable development of this science culture is imperative for continuing progress.

Sustainability

As mentioned earlier, several queries were raised about the Rockefeller project at the faculty of science of Mahidol University. The rapid phasing out of the activities of the foundation after 1975 caused a crisis in the management of the program. First, there was the transfer of the chairmanships of the five departments to Thai chairmen, who were relatively young; for some, it was only a few years after they had received their Ph.Ds. Only one department, pathobiology, which did not have an American chairman, was able to continue with the same person as the chairman. Along with this transfer of chairmanship, the number of visiting professors was down to a minimum or none. Second, there was a quick decline of financial resources.

These graduate programs had been supported by the budget of the faculty of sciences, the budget of the foundation through the faculty of sciences, and the budget of the graduate school. Now, only two sources remained. At that time, Thailand was beset with many social, political, and economic problems. Sustainable development was possible because the faculty of graduate studies successfully negotiated with WHO to provide financial support for 48 M.Sc degree candidates who would be the faculty of the two new medical schools in the provinces. The fellowships cost $2,000 yearly for one person, and each candidate was supported for two years. A portion of the grants covered tuition and living allowances; the remainder went to the departments to which the students belonged. The total grant came to about $250,000, a relatively small amount of money considering the implications and the outcome of the program. WHO first balked at the proposal, saying that it could fund only overseas training. Later, it changed its mind after realizing that for the same amount of money, they could send only ten individuals for training in the United States or the United Kingdom. Some 80 graduates had been supported under this program when it ended. This support helped sustain the life sciences program until 1980, when the new university administration raised funding support to the faculty of sciences and the faculty of graduate studies to a much higher level and managed to obtain re-equipment funding from the government to replace old equipment purchased in the late 1960s and early 1970s.

University-Based Research Vs. Independent Institutions

At this point, it may be pertinent to address the issue of whether it is to the advantage of developing countries such as Thailand to base their research in the infrastructures of the universities or in independent research institutes. Independent research institutes are familiar settings for research in developed countries in addition to those woven around the organizational framework of universities.

A number of developing countries have tried to create research institutions based on the Western model. This approach is supposed to make it possible to overcome the constraints related to research careers, low salary, poor infrastructure for research, and poor management. Some institutions, in order to fulfill these objectives, become agencies that need to be financed by donations from developed countries and that can only be run by expatriates at the professional level. They appear to be institutions more suitable for countries with a per capita income of $10,000 or more rather than ones in countries with per capita incomes of less than $1,000. Even though they may perform excellent research on problems of developing countries, the scientific and technical solutions to those problems are more likely to be conceived by those who, consciously or subconsciously, were molded in different social, economic, and cultural contexts from those where the solutions are to be applied. Sustainable development becomes a real problem in many research institutions established in this manner in the developing countries.

On the other hand, university-based research is closely related to local situations. The problem of maintaining research careers is partly solved through the adoption of academic positions with research as one of the functions. While the issue of low salaries remains in many universities in developing countries like Thailand, academicians still fare better than other civil servants. For those faculty members who like to do research, universities usually are able to provide better support than independent institutes. The university can also operate graduate programs to produce research-trained manpower. Graduate students can also serve as highly motivated research assistants. If the policy to promote and expand research capacity is clear and increasing financial and human resources are available, the public university system can expand its research capacity in a relatively short time and ensure that it will be sustainable for the future.

To avoid constraint on university-based research capacity,the university management must be able to cope rapidly and effectively with its expanded functions, especially for research management. They will have to adapt themselves and their faculties toward the goal-oriented, time-targeted research on national problems, new products, and new processes that represent the contemporary research needs of the country.

In countries like Thailand, some advanced research institutions have been established using indigenous researchers. This resulted in the recruiting of the best scholars from universities with consequent bad feel-

ings as well as in the weakening of the education institutions. There are also questions of the relevance of institutions that are based on infrastructures 10-15 times more expensive to run than comparable university-based research agencies. Whether the superior quality of research this kind of institution is supposed to produce, in the medium- and long-term context, will be justified—considering the negative aspects—will remain controversial. Sustainability is another question. In the case of Mahidol University, the policy for the expansion of research capacity through the expansion of the university seems to have paid off, not only in the research context, but in the expansion of research manpower and in numerous other related activities.

Health Service Research/Health Development Research

To avoid confusion in terminology, this type of health research is being considered in the broadest meaning: that is, research to better define health problems; situation analysis; research for policy and action alternatives and for modelling of action plans; research to assess various alternative-action plans that would be cost-effective and cost-beneficial; and in the optimization of available technology, people and managerial systems. In sum, it means research on the best ways to mobilize the community to address the issues conceptually and to take voluntary action to solve problems through behavioral and environmental changes. It also involves research to evaluate various health-related action programs, research on manpower, and on the appropriate use of contemporary and future technology to solve health problems.

It might be said that health service research in Thailand came of age shortly after the WHO declaration of Alma Ata, when the Thai government entered into an agreement with WHO to adopt a long-term primary health care strategy (health for all in the year 2,000). In 1983, the Thai Ministry of Public Health declared that health service research was an appropriate function for all of its officials.

A number of infrastructures in support of health service research activities had been in existence for some time. These are at the faculty of public health of Mahidol University and at the medical schools and other schools of allied health sciences in the various universities. There are also the units of the ministry of public health, such as the national epidemiology board, and, in the universities, the clinical epidemiology program—both of which have been supported by the Rockefeller Foundation. There is a health-policy study center that is now evolving into the Health and Social Policy Study Center at Mahidol University. The Thailand Development Research Institute (TDRI), a leading policy research institute, also pursues policy studies related to health in the fields of population and environment. Other institutions of this kind include the health-economics programs at Chulalongkorn, Thammasat, and Mahidol Universities. At Mahidol University, six research institutes address health and development issues of the country; they are the research institutes for (1) nutrition, population and development of health-care systems (Association of Southeast Asian Nations [ASEAN] Institute for Health Development); (2) health communication (Institute of Language and Culture for Development); (3) science and technology for development (application of technology for village development); (4) research on environmental problems at the faculty of environment and natural resources studies; (5) the faculty of public health, which has its own department of environmental health, industrial, and occupational health; and (6) the faculty of tropical medicine of Mahidol University, which pursues a trans-disease program where behavioral and environmental issues in tropical diseases are addressed.

With all of these matrices in place, one would expect that health-service research in Thailand would be moving forward in great strides. It has been the opinion of a number of observers that progress has been rather slow and that Thailand could have achieved more. Several reasons could be cited to support this conclusion. Both the academic institutions and the ministry may share equally for not moving health-service research faster. The principle that research and research for development are essential for the national health development, and that the academic institutions could serve as research and development arms for the ministry of public health as well as for other ministries, is not well perceived and accepted by all parties concerned. Both sides have failed to have a thorough dialogue on what each wants to do and have not agreed on mutual expectations. The academic institutions are slow in orienting their research toward the basic health problems for which the ministry of health needs solutions. On the alternatives to policy-

formulation action plans, manpower plans, evaluation, etc., the academic institutions do not have a clear understanding of the problems that the ministry considers important.

Other problems involve the evolution of a health-service research culture, which obviously has some prerequisites different from the tradition embracing biomedical research. Research in biomedicine is vertical in approach, while health-service research is more horizontal and multidisciplinary, involving biomedicine, clinical medicine, epidemiology, economics, behavioral sciences, social sciences, and humanities.

The traditions of biomedical research have been well established and are based on scientific competition, peer review, and publication in peer journals, but the traditions for health service research are still confusing. For instance, what if the ministry of health would like to find out whether it could achieve 100 percent EPI coverage by the year 2000 or, if not, what could they do about it? Scientific competition in this instance would be on planning, designing, and managing the project; the number of competitors might be limited because not many individuals or groups could undertake the research. Peer judgment on the outcome of the research would be partly objective and partly subjective because there would be many variables and assumptions. Perhaps the best judgment could only be rendered under sets of conditions (e.g., using computerized simulation models for assessment). Shortage of journals in health-service research would make it difficult to get publication in peer journals. There would be more nonformal publications and reports. Citation, the traditional evaluating mechanism in biomedical research, would be difficult in this case. Health-service research may be conducted at the macro as well as at the micro level; work at the micro levels would even be more difficult to fit into these various research-cultural patterns.

From the management standpoint, the effort to promote health-service research led to a grant-in-aid type of financing from international agencies that went mostly to big health-service research projects. These were difficult to conceptualize and to implement within a reasonable period of time. They were not sustainable by indigenous or local funding. The other problem has been the inadequate linkage between researchers and decision or policy makers at all levels of the public-health hierarchy.

Taking most of these problems into consideration, and with a view to overcoming some of these constraints, our university launched a small, health-service research program to seek out alternatives for the promotion of health-service research. The university scraped together some $40,000–$50,000 a year in funding to initiate 20–25 small, health-service research grants annually for the past five years. Most of these grants went to provincial or district health officers to conduct basic research or research for development on problems pertaining to primary health care in their provinces. Faculty members were encouraged to participate as co-investigators. We hope that those provincial health officers will learn how to implement plans after doing research on practical alternative solutions to health problems. It is expected that they will become familiar with the value of decision-linked health-service research. Perhaps in 10–20 years time, some of these people may rise to key positions in the ministry of public health, and health service or health-development research will really come of age in the health administrative system by that time.

Through the involvement of members as co-investigators, it is hoped that the faculty will be able to offer good methodologies to projects, and they themselves will learn how to orient academic research to a real-world situation. The grants were small and were given without a complicated audit system so as not to discourage the investigators with financial bureaucracy from the beginning. The investigators were told to spend the budget at their discretion, but that they must be accountable for getting good scientific results as well. Competition is inherent through the screening of preproposals submitted from a number of provinces and districts where the number of preproposals exceeded the number of grants available.

The relatively small size of each grant was deliberately planned in view of the sustainability of future research to be supported by local resources. The small financial support helped in the sharpening of the focus of activities so that the researcher could do only essential research for three to four months unless the project involved variables, such as seasons of the year, etc. The short duration enables the health officials to complete

what is often their first experience of health-service research in a short time. The satisfaction of completing their first research project well, we hope, will sustain their enthusiasm and make them feel capable of continuing their research interest in the future.

A portion of the budget was spent to bring the investigators together for one week to work on detailed proposals and work plans, and to get special training on epidemiological methods and the application of computer programs in support of their work. When the research activities were completed, they were brought together again for analysis of the data and preparation of the final report. We emphasized that they should prepare a good executive summary so that their superiors could be informed of the research and its outcome, and perhaps be convinced to try the alternative-action plan on the local health scene. Good executive summaries may also stimulate their superiors to read the full report more thoroughly.

In the past five years, some 120 small, health-service research projects have been completed. They are being analyzed and it is expected that a training module for small, health-service research program managers can be developed. Future managers could be trained and, with a relatively small amount of investment, health service research activities might be achieved in Thailand and even in other countries adopting a similar model.

Current Trends in Health Research in Thailand

While health research appears to be moving well in Thailand, there are still some constraints and looming problems that make it unlikely that the momentum of progress can be maintained in the near future.

1. *The trend in biomedical research has led to strengthening of research capacity in various disciplines.*

As the country moved toward the 1990s, there was a subtle change of direction in that the researchers became more interested in health-care-related products and processes. This is a welcome trend to a certain extent, since it leads toward some degree of self-reliance and self-sufficiency in health-care-related industrial manufacturing in the future. For example, there has been more interest in the development of immunodiagnostics for various infectious diseases, such as the common tropical diseases, hepatitis B viral infection, HIV infection, in pregnancy tests and tests for the blood bank. Yet there have been problems in identifying product priorities for research and development, potential marketing targets, research on production scale-up, quality control and quality assurance, packaging, and appropriate marketing systems. The problems involve appropriate linkages with researchers and commercial groups inside as well as outside the country for collaboration and rapid technology transfer.

Parallel to the problems of upstream and downstream processing are issues of intellectual property and licensing of technology. Research and development in biomedical- and life-support instrumentation, drug and vaccine research, and the development of biomaterial have also been started and have great potential, but these have encountered similar difficulties. The increase in the interest in the overall development of science and technology in the country has been a positive factor supporting the progress of health research. At the same time, there has been too much pressure for getting quick returns (e.g., getting new products and processes that might be commercialized at the expense of disciplinary research in the basic sciences).

There is also a trend toward adopting the patronage system, which is traditional in the Thai society, into the research system, either through politicians or influential individuals. This does not bode well for real progress in science and technology. The increasing interest in science and technology helps to bring to the forefront the shortage of research manpower in the country. This issue will continue to be the bottleneck against the intensification of research in health and related subjects.

In health-service research, there are welcome trends in the establishment of the national epidemiological board and in the clinical epidemiology program. The direction toward national health-development research as enunciated by WHO, or the essential national-health research as promoted by the International Health Research Commission, underlines the need for expanding the scope of health research and bringing researchers in other disciplines outside the health field into health-research activities. This raises many issues about the careers of these researchers. Should they remain a health-oriented group in their traditional

faculties or departments? Should they be integrated directly into the health disciplines? Or should they belong to newly created, specifically defined, health-oriented faculties or departments? All of these alternatives are being tried in Thailand and it will be interesting to see the outcome in the next 10 or so years.

2. *New subjects in health research include environmental health and environmental toxicology relating to rapid industrialization, and to intensification of agricultural activities associated with the excessive use of pesticides and fertilizers and the downstream runoff of these pollutants.*

There are also health-related social problems such as occupational health and labor medicine; higher rates of industrial and traffic accidents; and woman, juvenile, and child problems in connection with drug and substance abuse, prostitution, and sexually transmitted diseases. These issues require the strengthening of the health-research management of the country as well.

3. *Research management and research support: At the present time, the overall management of health research rests with the medical-science division of the National Research Council, which has an annual budget for extramural grants of about 3 million bahts a year.*

It may be of historical interest that 30 years ago, the ministry of public health established a medical research committee that oversaw research funding for health research. When the National Research Council came into being, it absorbed this committee, which became one of the ten research divisions of this new agency. Two important events in the evolution of the National Research Council interfered drastically with the overall development of the research capacity of the country. The first happened when the council was transferred from the office of the prime minister to the newly established ministry of science, technology, and energy some ten years ago. While this may have some merits, the fact that the council was transferred from a neutral, bureaucratic agency to a ministry which is sectoral in responsibility, created a bottleneck in policy development and implementation. Ideally, the National Research Council should operate in a way that transcends all the ministries and supports agriculture, industry, the interior, public health, education, defense, and the universities, as well as its own ministry of science, technology, and energy.

Research on social sciences, culture, and humanities are also important functions of the National Research Council, and its support of these disciplines under the aegis of the ministry of science could be confusing under the sectoral bureaucratic approach.

The second, gradual event was the increasing expansion of the intramural programs of the National Research Council at the expense of the extramural programs. This resulted in a slower rate of increase of extramural funding compared to the rate of increase of the intramural program. The inadequacy of the National Research Council resulted in a serious credibility problem at all levels of government and in the private sector as well. With surging interest in science and technology for development, the government had to devise a new agency to administer more effective and more cost beneficial activities (i.e., the STDB). The credibility problem of the National Research Council also made unsuccessful the effort to get the overall research budget to the level of 0.05 percent of the GDP. This target had been set at the beginning of the sixth National Economic and Social Development Plan and still could not be realized objectively.

In terms of the funding for health research, small and medium sized grants (up to $25,000 for 3–4 years duration) could be met by local support, even though the number of grants could definitely be increased if more money were available. Funding for big grants ($150,000–$250,000 for 3 years) could only be made by the STDB through a soft loan made by USAID to the Thai government. Big grants could come through various USAID funding mechanisms such as PSTC and BOSTID, and by international agencies, such as WHO, etc. These various shortcomings point to a serious problem at the policy-making and top-management level of the government, and will preclude real progress in research promotion and development. It exerts a negative impact on the progress of science and technology with unfavorable consequences for both biomedical and health-service research.

Program research support may come from the bilateral assistance programs, multilateral assistance programs, international agencies such as WHO and private organization and foundations. Some of this support goes to individuals, but some goes to institutions or universities. Project support goes mostly to individual investigators from several types of agencies, public and private.

Most of this support is well intended and in many instances, quite appropriate to the issues being addressed through research. It becomes the mainstay for the support of serious research efforts in Thailand at the institutional level. At Mahidol University, we receive some $3 million annually from external sources. At the same time, it has been apparent that donor agencies also operate under different policy objectives. This has brought confusion to the overall national-research objectives, which were poorly defined already. The universal trend for investigators to shift their fields of interest to where money is available is certainly applicable to Thai investigators with some detrimental outcome. For example, at least two Ph.D.s in plant-cell sciences in our university were lured into medical parasitology research during the WHO–TDRI expansion.

4. *Current assessment of the situation in health-research, both biomedical and health-service-oriented, yields an interesting observation.*

There seem to be three waves of development: The first wave, which began around the 1960s, saw the increasing capacity of biomedical research on a disciplinary basis. The second wave, started toward the end of the 1970s, called for strengthening of multidisciplinary inter-institutional research, which covered both biomedical and health-service research. This direction, while useful for the broad application of health research toward problem solving and research for development activities, resulted in a subtle weakening of research capacity in the disciplines of biomedical research. This is due to inadequate and imbalanced funding, a shortage of research manpower, weak policy formulation, and a less-than-satisfactory implementation of research policy. Health-service research is suffering from the lack of a clear-cut direction for social scientists and humanists who opt for a health orientation in their disciplines. The general weakness of their own disciplines coupled with the difficulty facing their newly assumed roles forces them to carry a double burden. They have to compete with their peers in their traditional disciplines and also with biomedical and clinical investigators who have established themselves nationally as well as internationally.

It seems that a major effort is needed; this may constitute the third wave of research development, again strengthening the capacity and depth of biomedical sciences in the various disciplines, while continuing to widen the horizontal linkages of those disciplines. At the same time, we have to find ways and means to support the health-oriented social scientists and humanists to find niches for themselves in the overall health-research system and to make it possible for them to move forward with confidence and to compete and contribute successfully to the total research effort along with their colleagues in the biomedical and clinical disciplines.

Traditions and Cultures in Relationship to Science and Technology Development

What we have discussed so far pertains to issues related to science and technology development in the contemporary context. These may include factors such as human resources, facilities, financial support, and management. However, one important element that has not been mentioned is the importance of tradition and culture as related to scientific and technological achievement in the historical perspective. The Kingdom of Thailand was first established some 700 years ago. During the seven centuries since, there were periods of prosperity and greatness achieved in many fields but hardly any noticeable performance in science and technology. There have been a large number of writings throughout this period, mainly on law and order, traditional medicine, and poetic literature. Thais have demonstrated themselves highly capable in the transfer of technology as well as in the adaptation of new products or processes to modernize the country during several periods of their history.

The first Thai student was to receive a theological degree at the University of Paris during the reign of King Louis XIV. A number of French Jesuits came to Thailand during that period to teach astronomy, mathematics, architecture, and religious studies. This was interrupted at the end of the reign of King Narai, who had sent the first Thai mission to the court of Louis XIV.

A serious expansion in technology transfer from the West began during the reign of King Rama IV, who was a contemporary of President Lincoln, and was further intensified during the reign of King Rama V. Thanks to these modernization efforts, Thailand is the only Southeast Asian country to escape colonization. While we could not yet see any indigenous development of

science in Thailand, there had been significant achievement in agriculture (e.g., the improvement in crops such as rice and fruit trees that Thai farmers managed through observation and experimentation, without knowledge of Mendelian genetics). One important point is that there had been no known systematic writing on science and technology throughout the whole history of Thailand. This remains a problem of contemporary science and technology in the country. Thai scientists do not write well and do not publish as much as they should.

We have to look back 5–10 thousand years to obtain the first evidence of the technological achievements of Thais. The archaeological excavation at Ban Chiang in northeast Thailand uncovered early ceramics and kilns, which showed that people at that time had discovered the principle of high-temperature ceramic firing. The next discovery was bronze utensils, which showed that the people could raise the temperature of the kilns high enough to melt metals such as copper, iron, and tin. Study of bronze utensils in Ban Chiang show them to be as ancient as the earliest bronzes elsewhere, suggesting that northeast Thailand was the site of one of the most advanced technologies of the world at that time. Again, there was no documentation of this achievement in any writing, stone carving, or clay tablet.

In the early period of the modernization of medicine in Thailand, and at the beginning of biomedical research after World War I, we find a few scientific papers published by Thais in Western journals. These include a first study of the complete life cycle of the gnathostoma spinigerum, a common parasite at that time. An experiment to reverse the heartbeat of a chick embryo was reported in the *Anatomical Record*, a top American journal in this discipline. The article received a favorable comment from Professor Patten, one of the foremost embryologists of the time and the editor of the journal. Prince Mahidol, the father of our present monarch, published a report of his study of an intestinal parasite that infested children in Boston to fulfill a part of the requirement of his M.D. Cum Laude degree from Harvard University. This paper was published in an early issue of the *American Journal of Diseases of Children.*

Since then, a number of Thai biomedical-research investigators have contributed steadily to international biomedical journals. At Mahidol University, there is an unpublished guideline that all Ph.D candidates in the life sciences must submit at least two papers based on their research to top international journals in their disciplines and show evidence of good editorial comment or acceptance for publication before they are allowed to stand for the defense of their theses. As a consequence of this, virtually all Ph.D candidates have been published in good journals.

In some way this shows that, given the opportunity and even in a less than optimal environment, Thai investigators can compete in international science. However, we have to recognize various issues when we plan for the strengthening of research capacity. They are the cultural constraints on science and technology, the inherent lack of traditions of scientific writing, and the difficulty of writing in a foreign language in a Thai milieu.

Overseas Education and Training

Overseas training of research scientists is essential to building up the capacity for research in the developing countries. It is apparent that to consider an overseas education program for a country aspiring to raise the level of its research capacity, that country should already be in a position to train its undergraduates and the overseas education should be at the level of graduate study. Overseas training should not be considered as an end in itself. A country that wants to build up its own research capacity, whether with its own money or with the money that others contribute, should think through and consider the following issues carefully.

1. *National research capacity represents an important enabling mechanism for national development.*

This objective will have to be coupled with the goals of developing self-reliant and self-sufficient manpower, as much as possible and in the appropriate time frame.

There has to be some consensus on this issue at the top level of decision makers among the various establishment groups of the country.The decisions would lead to the choices of sending students for overseas education at the post-graduate level, launching a domestic graduate program, or both—concurrently or sequentially.

2. *There has been a tendency to send young research scientists for relatively short-term training in industrial countries.*

This happens for several reasons that are, perhaps, beyond the scope of this presentation. It is apparent that under this condition, scientists from the developing counties will gain mostly current research methodology, which may have only a limited and short-term value. The expectation should be that the education and training of scientists from developing countries overseas will help in the molding of those individuals to be contemporary in analytical and cognitive knowledge and to have necessary skills in a particular discipline. They should be well-versed in the uses of information so that they can update their knowledge and skills continuously. They have to be well-steeped in the scientific culture of the West in terms of scientific, managerial, and ethical accountability, as well as in peer-review mechanisms, etc. These skills require a long-term education, preferably to a Ph.D degree level.

The problems related to long-term overseas training are obvious. It is costly: The completion of a Ph.D degree over a period of four years would require an investment of $60,000–$100,000. The chance of losing a successful Ph.D graduate to the industrial countries was high in the past and could be even higher in the future. A recent study showed that from 1974 to 1988, the percentage of immigrant scientists and engineers in the United States almost doubled from 5.8 percent to 10.6 percent of the total number. The reentry problems for those who return home after completion of training are partly the result of poor pay, poor logistics, and poor management support (among other factors), and make the attrition rate very high. My personal observation is that, if a returning Ph.D does not publish his Ph.D thesis in one year, the chance is that he will never publish it. Also, if a returning Ph.D does not begin to do the kind of work he has been trained to do in three years, there is a high probability that he will never be able to function as a research scientist in his own country.

The issues related to short-term versus long-term overseas training and to Ph.D. study abroad versus local Ph.D study are neither simple to define nor easy to resolve. The issues are very complex and decisions on what to do can be made only under certain sets of conditions and objectives. Part of the problem lies at the doorstep of the developing countries. They do not consider research capacity as their priority for development and they encourage overseas training. Some countries, like Malaysia, Thailand's next-door southern neighbor, have opted for overseas training extensively. It spends some $1.46 billion yearly to send students overseas, about seven times the budget it spends for its seven universities annually. Obviously overseas education and training are essential, but the decision to invest in them should take into account whether returning graduates will have jobs for which they have been trained.

3. *The careers of research scientists after they return to their country need to be thought out and prepared.*

There are extreme views on this issue. One view is to try to place the returning research scientists in an elitist research institution. The view at the other extreme is that there should be no special consideration, since the country has spent a considerable amount of money on them already. A complicating factor is the time lapse before graduates return to the country, which results in the fact that those people who set policies earlier have frequently moved on to new responsibilities, and their policies may not be carried out in full.

It is apparent that this is not an all-or-nothing type of situation. The best alternative is to put returning scientists into positions where they can not only do research, but have the opportunity to train new scientists, either in a formal graduate program or on an informal basis. There must be a view to nurture the career of the research scientist as an integral part of the overall promotion of science and technology in the country.

4. *The overseas institutions where young scientists receive their training deserve some consideration.*

Overseas training institutions must be approved by some criteria, academic or professional. They should be interested in the training of students from overseas, realizing cross-cultural and linguistic problems and problems arising out of the difference in educational systems of different countries. Overseas students may not necessarily get the best out of certain highly prestigious institutions where the environment may be highly competitive—that is, mission-and-results oriented. Smaller institutions may be able to give a better education, in the fullest sense, rather than offering only training to the overseas student.

SECTION 4: ECONOMIC RESEARCH-CAPACITY BUILDING AT THAMMASAT UNIVERSITY

Background

Economics was first taught in Thailand in 1934 when Thammasat University was founded as an open-admissions people's university. Economics was then part of the original curriculum for Thammasat (or moral science) graduates, who were trained basically to work in law-related professions. The curriculum was of a French style and was taught mainly by French-educated Thai professors. Until the mid-1960s, there were very few full-time staff members, and most courses were conducted by part-time instructors who were judges and other government officials.

The first four faculties (law, accountancy and commerce, political science, and economics) were created in 1949 to provide for more-specialized education. Thammasat University became a limited-admissions university in 1960, and liberal-arts education was introduced in 1962. From 1964 onward, all undergraduate programs required one year of liberal arts and three years of specialized fields. Most of the graduate programs established before 1969 were part-time evening operations.

The Role of the Rockefeller Foundation

The Rockefeller Foundation program at Thammasat University started in 1964 largely from scratch, when there were a handful of full-time staff members, a large number of students, and rather rigid, out-of-date curricula. In the early 1960s, the economics faculty had only 5-6 full-time staff members, and 37-39 part-time lecturers, while annually admitting about 400 undergraduate and 70 graduate students. The Rockefeller Foundation assistance in the first few years of the program was given widely and evenly across different disciplines in the university, but was eventually concentrated on the economics faculty. The shift in direction coincided with the appointment as faculty dean of Dr. Puey Ungphakorn, former governor of the Bank of Thailand and a charismatic and highly respected intellectual leader. It was thought also that the development of the economics faculty should have been given high priority because it would directly contribute to economic policy formulation at the time when the government started to put more emphasis on economic development based on economic planning.

It was Dr. Puey, in collaboration with Rockefeller Foundation representatives, who formulated the five-objective, four-stage program for the economics faculty.[1] The objectives were to improve the quality of the undergraduate program, establish a master of economics program in English, promote policy-oriented research, develop the faculty as a leading sector to strengthen the university as a whole, and to make the graduate program a regional training center. The four sequential stages involved the recruitment and graduate training of full-time junior-faculty members, the implementation of an improved undergraduate program, the introduction of an English-language, master of economics program, and the creation of an effective research program.

The Rockefeller Foundation assistance was in the form of scholarships granted to faculty staff, for overseas training, and field staff and visiting professors, who were to give advice, formulate plans, develop curriculums, teach courses, and conduct research. Some funding was also provided for library support and research projects. In money terms, the total Rockefeller Foundation assistance to the economics faculty up to 1977 amounted to about $3.6 million, 60 percent of which was spent on field staff and visiting professors, 30 percent on scholarships. It is worth noting that the total amount was about the same as the government budget of the faculty during the same period, 1964-1977.[2]

The undergraduate curriculum was improved in 1966 by strengthening its content in economics, mathematics, and statistics. The improved program was implemented starting in 1966, with some courses taught in English by visiting professors. A new English-language, master of economics program began in 1969 as the first full-time graduate program in the university. Full scholarships, some of which were financed by the Rockefeller Foundation, were given to all graduate students in the program. Some foreign students from the region were also admitted into the program and formed 10-20 percent of the entering class. In both the undergraduate and graduate programs, planning and curriculum development were prepared mainly by Rockefeller Foundation field staff and visiting

professors. They also initially conducted all graduate courses, but by 1975, almost all of the teaching was taken over by Thai scholars who returned from overseas with their advanced degrees.

In the area of staff development, the Rockefeller Foundation provided scholarships to faculty members for overseas graduate training. Initially the only probable candidates for the scholarships were from a pool of newly recruited members. Before 1971, most Rockefeller Foundation scholarship awardees were locally trained at the undergraduate level from Thammasat University, and some were graduates from Australia and New Zealand under the Colombo Plan. Later, more scholarships were granted to top graduates from the faculty's own graduate program. All awardees were bonded to return and work in the faculty for twice the time they spent studying overseas.

From 1966 to 1978, a total of 29 Rockefeller Foundation scholarships were granted to faculty members for advanced training in the United States; 25 scholars returned with their Ph.Ds. The Rockefeller Foundation also financed 15 faculty members to study in the masters program of the University of the Philippines, and five of these members later obtained their Ph.Ds in the United States. All advanced degrees were from various U.S. universities in rather diverse fields (e.g., international economics, public finance, agricultural economics, and labor economics). The choices of university and specialized fields were generally decided upon by individual scholars themselves, perhaps influenced by advice from Rockefeller Foundation visiting professors and field staff in some cases. During the Rockefeller Foundation program, the faculty also obtained scholarships from other sources, including funding from the university. However, the Rockefeller Foundation was by far the single largest donor, having awarded about one-third of the total 100 scholarships awarded to faculty members so far.

Economic research capacity at the faculty was developed during the last phase (1970–1981) of the Rockefeller Foundation program. Some initial research efforts were made by Rockefeller Foundation visiting professors working in collaboration with Thai faculty members and graduate students. There seemed to be no specific research agenda, but priority was given to applied research on the Thai economy aimed at producing teaching materials and contributing to government economic policy formulation. Relatively small research funds were given by the Rockefeller Foundation, perhaps because the faculty was viewed as having a limited absorptive capacity in research. It is interesting to note that the program set a precedent in paying faculty members research honoraria, recognized as an incentive for research and a supplement to low government salaries. An economic research unit was set up to promote research activities by allocating research funds from the Rockefeller Foundation and other sources. A number of faculty members participated in the interdisciplinary, university-wide research promoted also by the Rockefeller Foundation through the Thai Studies Program Institute.

Faculty Response After Rockefeller Foundation Withdrawal

For most faculty members, the termination of the Rockefeller Foundation program in 1981 was not unexpected and not abrupt. By that time, most of the Thai Rockefeller Foundation scholars had returned with their advanced degrees and had already taken over several tasks previously carried out by Rockefeller Foundation field staff/visiting professors, and by Dr. Puey and his senior assistants. However, the Rockefeller Foundation support had been so massive that, even though the termination was gradual and expected, it had some adverse effects in the short run. The problem for the faculty was how to maintain the ground gained in its undergraduate and graduate programs and how to make advances in research. It did not have any difficulty maintaining the undergraduate standards, but the masters program still needed funding for scholarships to attract top students and for visiting professors to maintain some international linkages. So far, the faculty has been successful in obtaining enough graduate-student scholarships for both Thai and foreign students in the masters program. Continuing support has come from the Thai government, the Bank of Thailand, and some Thai commercial banks and companies. Diversification in funding sources also attracted new donors, notably the Ford Foundation and some Japanese foundations/organizations. The Japan Foundation and the Ford Foundation have been regular sponsors for visiting professors at the faculty.

In the past ten years, the faculty has recruited staff members who were either new Ph.D graduates or new masters graduates, most of whom were from the Thammasat master of economics program. The faculty has maintained a policy of encouraging new staff to go for the highest degree of training possible. After the Rockefeller Foundation withdrawal, funding for staff scholarships has become less available and more competitive. Despite such a limitation, over two-thirds of the newly recruited members after 1981 were able to compete for overseas training scholarships from various sources, including the Japanese government, the Canadian government, the Harvard-Yenching Institute, and the Australian government.

In 1978, Baldwin estimated that there were 25 faculty members with Ph.Ds among the total of 76.[3] At present, there are 41 Ph.D holders among the total of 81. Therefore, the proportion of members with doctoral degrees has increased from about one-third to about one-half during the past 12 years. However, the faculty has also lost quite a few capable staff members. From 1964 to 1991, there have been about 100 present and former faculty members, 21 have left the faculty, mostly to the private sector; 12 of those who left are Ph.D holders, and ten are former Rockefeller Foundation scholars (see Table 1).

For most faculty members, their research activity has been recognized not only as a way to gain knowledge and experience, but also as a means to earn extra income, supplementing their low government salaries. For quite some time, government salaries have been low, relative to the cost of living in general and, particularly for some faculty members, relative to what they could obtain in the private sector. For some individuals, their salaries could be raised by up to six times if they joined large private firms. However, like other government officials, university staff members have a high degree of job security. They are appointed on a permanent basis, with a mandatory retirement age at 60. Research honoraria/stipends are seen as an important incentive for keeping capable staff members on the faculty. It is important, therefore, for the faculty to vigorously seek research funds and to encourage individuals active in research to obtain research contracts by themselves.

After the Rockefeller Foundation withdrawal, research funding sources for the faculty have been diversified, and there are now four types of sources:

1. International organizations (most important) that include the World Bank, USAID, the Ford Foundation, the International Rice Research Institute, ILO, UNDP, the Japan Foundation, UNCTAD, ESCAP, ADB, and IDRC.
2. Thai government funding, either indirect—through the Thai Studies Institute—from the National Research Council, or direct from such government agencies as the National Economic and Social Development Board (NESDB); the ministries of university affairs, commerce, and science-technology-energy; the Board of Investment; the National Energy Agency; and the National Education Council.
3. Funding from the university and faculty, whereby university funds are used for financing curriculum-development research and faculty funds are earmarked for small research projects.
4. Other local sources, including commercial banks, state enterprises, and the TDRI, which has recently been an increasingly important source.

So far, international organizations are the most important source of research funds, accounting for over half of the faculty's total research contracts. All sources, except the university, usually pay honoraria at a level ranging from 100 to 300 percent of researchers' government salaries. Research topics are specified by all funding sources, except for the university, the faculty, and the National Research Council.

The Ford Foundation New International Economic Order program broadly defines international economics as the area of research. Most research projects by faculty members are policy-oriented, as dictated by funding sources. Faculty research covers various fields including agriculture, rural development, international economics, labor, industry, population, money and banking, energy, education, and public finance. Faculty members most active in research are those with doctoral degrees, but not all Ph.D holders are active in doing research. According to my own judgment, at present, 38 members out of the 71 active members (or just over half of the total) can be categorized as being research-active. (The number of active members excludes those on study leave. I define a member who is active in research as one who has been engaged in some research activity in the past five years.)

Observations by an Insider

In his 1979 review of the Rockefeller Foundation program at Thammasat University, Baldwin presented a detailed assessment of the program in the economics faculty up to 1978. What I can add to Baldwin's very accurate and comprehensive work is some observations on related developments in the faculty after 1978.

Baldwin regarded the Rockefeller Foundation's contribution to the improvement of the economics undergraduate curriculum/program "a major success."[4] Indeed, 12 years later, the program is still regarded as the best training ground of economics graduates in Thailand. It is a major source of economics graduates for the public and private sector, and for a number of graduate programs in the country.

Baldwin was cautiously optimistic about the English-language master of economics program. According to him, "While standards in admissions and program content have been maintained, the program attracts less top students because of shifts in job demand from economists to MBAs."[5] I think such a statement is still valid today, perhaps more so because it is also more difficult to graduate from the master of economics program than from a MBA program. Students are required to write theses in the economics program, but not in an MBA program. Furthermore, in the past 8–10 years, graduate students in the economics program tended to take a longer time to complete their theses than before. One explanation is that the Thai teaching staff have not been as available for thesis advice/supervision as Rockefeller Foundation visiting professors were in the past. They have been busy with their research—to earn extra income—and as a result, less attention has been given to students' theses, particularly when the theses were not relevant to their research work.

According to a 1990 survey on graduates from the English-language master of economics program, there were 311 graduates during 1971–1989 (see Table 2). Over 30 percent of the graduates whose occupations were reported taught in universities, the majority of which were graduates before 1981. About 40 percent of the reported graduates worked in the private sector, mainly in financial institutions. I believe that most of the graduates whose occupations were not reported also worked in the private sector. The rest were in government agencies, state enterprises, and international organizations. There were 42 graduates, or 13.5 percent of the total, who finally obtained Ph.D degrees, and over half of these Ph.D. holders were masters graduates during the first five years of the program. Most of them chose to pursue careers at universities. About three-quarters of all the graduates are Thais. The rest were foreign students from various countries in Asia: Nepal, South Korea, Indonesia, Hong Kong, Japan, the Philippines, Bangladesh, China, Sri Lanka, Malaysia, and India.

Staff development was seen as another successful part of the Rockefeller Foundation program at the economics faculty.[6] The high rate of academic degree attainment among the Rockefeller Foundation scholars (25 Ph.D holders among 29 sent for overseas training) reflected the effective candidate preparation/selection process adopted by Rockefeller Foundation program officers. Most former Rockefeller Foundation scholars have contributed significantly to the academic environment of the university through their participation in teaching, seminars, and research. Some have played an important role in administrative duties for the university and faculty. In the 20 years after Puey, eight out of ten economics deans were former Rockefeller Foundation scholars. However, about one-third of the Rockefeller Foundation scholars have already left the faculty for more lucrative jobs, proving that the more capable group of staff are also the more mobile. Still, as mentioned earlier, the faculty continues to attract new Ph.D graduates and those who can win more competitive scholarships for advanced-degree training. This should indicate that candidates with good potential are still available and that high standards are maintained in staff selection.

Baldwin felt in 1978 that it was "too early to assess the results of Rockefeller Foundation assistance on institutional research at Thammasat University."[7] He observed that "very little of the research by members of the faculty of economics has been published in refereed or professionally edited independent outlets outside of Thailand."[8] He concluded that "there is not as much reason for optimism about the future of institutionalized research at Thammasat as there is about improvements made in the curriculum."[9] Since 1976, research activity in the faculty has increased remarkably as its members have gained more experience and confidence. Expertise has been developed in such

fields as agriculture, rural development, public finance, labor, education, industry, international trade and finance, and energy.Funding has become more available, mainly from international/foreign sources. Immediately after the Rockefeller Foundation withdrawal, Ford Foundation assistance was secured in the New International Economic Order program, which promoted research in international economics. The World Bank, the Japan Foundation, and several United Nations agencies later became other major sources of research funds.

The faculty's linkage with government agencies has been established through research and advice by faculty members for economic planning and policy formulation. There are several instances in which faculty research contributed to government work, for example:

- The national economic and social development board (a planning agency) commissioned some faculty members to produce research papers as input in drafting the fifth and sixth economic and social development plans;
- Assessment of the impact of the rural job creation program was made for the prime minister's office;
- A number of research papers on manpower forecasting and planning were prepared for the ministry of university affairs and the ministry of science, technology, and energy.

In recent years as the Thai economy grew rapidly and economic management has become more complicated, the government has come to recognize and appreciate the role of economics and university economists in policy formulation and decision-making. Consequently, there has been an increasing demand for economic research, and the advisory role of academic economists. Since 1986, TDRI, a government think tank, has also provided another research funding channel through which research work has been subcontracted to some faculty members.

There is also a limited, but expanding, demand for economic research by the private sector (banks, business consultants, and large corporations). Faculty members provide services in this segment of the research market by preparing industry studies, economic forecasts, and government policy analyses.

Research work has been promoted and facilitated in the faculty by a number of factors. Research assistance is readily available from a pool of graduate and undergraduate students. Computer facilities and a data bank on the Thai economy were set up some time ago for teaching and research. The faculty also adopted a rather flexible approach in allowing sabbatical leaves and secondment to local and international research organizations to enable its staff to gain experience in research. To some extent, research work is required for promotion in academic rank, particularly at the

Table I
Economic Faculty Staff Status, as of March 1991

	RF Scholars U.S.-Educated	RF Scholars U.P.-Educated	Others	Total
Total (past & present)	29	15	57	101
Ph.D	25	5	25	55
Non-Ph.D	4	10	32	46
Remain in Faculty	19	13	48*	80
Left Faculty	10	2	9	21
Research active	13	1	24**	38
Research inactive	6	12	15**	33

U.P. = University of the Philippines. RF = Rockefeller Foundation.
* Including 9 who are on study leave. **Excluding those studying overseas.

Table 2 Thammasat Master of Economics Graduates: Number, Occupation, and Nationality

	Year of Graduation (Master's Degree)					
	1971-75	1976-80	1981-85	1986-89	Total (1971-89)	
					Number	%
1. Total number of graduates	72	78	96	65	311	100.0
2. Occupation:						
University	30	21	8	8	67	34.0
Government	1	3	10	3	17	8.6
State enterprise	7	6	11	2	26	13.2
Private sector	22	13	25	19	79	40.1
International agency	1	5	2	-	4	4.1
Unknown	11	30	40	33	114	-
3. Ph.D graduates	25	11	6	0	42	13.5
4. Nationality:						
Thai	63	58	65	51	237	76.2
Foreign*	9	20	31	14	74	23.8

*Foreign nationality breakdown: 14 from Nepal, 11 from South Korea, 8 from Indonesia, 8 from Hong Kong, 6 from Japan, 5 from the Philippines, 5 from Bangladesh, 5 from China, 4 from Sri Lanka, 3 from Malaysia, 2 from India, and 1 each from the United States, France and Canada.

professorial level. However, there is no strict rule of publish or perish. To be recognized, research work can be published in any refereed journals, not necessarily international professional journals. This may explain why very little research by faculty members has been published in "independent outlets outside of Thailand"—an observation made by Baldwin in 1979, which is still true now. Moreover, instead of having research work, one can be promoted by writing textbooks, which in most cases are the translated and rearranged Thai versions of textbooks originally written in English.

It is difficult to assess the quality of faculty research, since there is no clear and objective indicator of quality. My judgment is that research work by faculty members is quite acceptable by regional, if not world, standards. There seems to be an increasing demand for it by both local and international research users and funding sources. A few faculty members have managed to get their research articles published in some regional economic journal, (e.g., *Journal of Developing Economics*, *Journal of Southeast Asian Studies*, and *Asian Development Review*). The faculty has also been producing its own journal, *Thammasat Economic Journal*, on a regular basis for a number of years by publishing refereed articles, most of which are written in Thai. Although the circulation of the journal is not large, there is no lack of good-quality articles from faculty members and economists in other institutions. For research projects funded by the faculty and the university, both research proposals and research reports must be peer reviewed; in some cases the level of the research honorarium is determined by the evaluation of research work. Several faculty members have been active in presenting their research findings in a number of international conferences outside of Thailand.

As mentioned before, the low government salaries of staff members have put pressure on those active in research to earn supplementary income through more research, with a blessing by the faculty. Some members have managed to develop specialized research skills and areas of interest that reinforce their teaching ability. However, many others have spread themselves too thin by working on too many research projects and covering too many research fields. Such a practice may lead to the diffusion of research skills, which is not healthy for professional and academic development. In many cases, there is a real problem arising from the conflict between research and teaching.

There seems to be a need for research grants with no strings attached in terms of specific topics or areas of

research. In the past, the Rockefeller Foundation provided this type of research grant, which was not large enough and has already been used up. Such grants should enable the faculty to develop a more systematic and academic approach for research that can complement policy-oriented research, teaching material development, and thesis work by graduate students. This need will probably become greater as the faculty is to embark on a Ph.D program in 1992.

The Ph.D training program will be the only new and major program in the faculty since the Rockefeller Foundation withdrawal. It is viewed as an inevitable and necessary development to further strengthen the faculty and to increase the economic research and training capacity in Thailand.

The decision-making process of the program reflects both the strengths and weaknesses of the faculty. The idea was conceived about eight years ago when it was seen as country's leading faculty, the one most ready to launch the first full-time Ph.D economics program. It had run the relatively well-established masters program for some time and had strong faculty staff who were active in research.

There was then, however, strong resistance from some faculty members who argued that the faculty had not reached that stage of development. They pointed out the lack of experience in research and supporting resources needed to sustain a good quality doctoral program and were afraid that the new program would eventually lower the standards of the existing undergraduate and graduate programs. Moreover, they criticized that the Ph.D curriculum would be modelled after those in Western countries and would not be appropriate and relevant to a developing country like Thailand.

It took at least six years after a Ph.D curriculum was first drafted for the faculty to decide in 1990 that the program will begin in 1992. On the one hand, the delay shows that without a strong dean like Dr. Puey, and without any magnanimous donor like the Rockefeller Foundation, the collective leadership that eventually emerged after Puey's departure is not conducive to rapid and major changes in terms of either magnitude or direction. On the other hand, the long lead time can be viewed as a valuable breathing space for the faculty to prepare itself adequately for a new phase of development.

To ensure the relevance of the program, the curriculum is designed to offer compulsory seminar courses in major specialized fields with special relevance for developing countries. The program is, in fact, a four-year program with the first two years containing the same courses as those in the existing masters program. There is a plan to encourage future teaching staff to undergo postdoctoral training in economics departments overseas specifically to prepare teaching materials in theory and applied fields that will be relevant and useful to the new program. The faculty is seeking a link with well-established overseas universities that can provide such postdoctoral training, as well as regular visiting professors who will teach graduate courses and conduct collaborative research.

The new Ph.D program in Thammasat will be quite a challenge for the university and the faculty. Most state-owned universities in Thailand are now facing the internal brain-drain problem, where an increasing number of their capable staff members in several fields are leaving for better pay in the local private sector, international organizations, and research institutes. The economics faculty has been losing a number of well-qualified and highly experienced staff members, and is likely to lose more in the near future. A drastic reform is badly needed to retain the remaining staff and to attract high-potential candidates by improving pay structure, research compensation, and other working conditions in the university. Such a reform is now under consideration by the government, which has recently proposed an option for state universities to opt out of the regular civil-service system. The option is designed for universities to have their own pay structure, which is supposed to be competitive and attractive for well-qualified university personnel. Although this issue is usually regarded as an internal matter of each country, foreign donors can potentially play an important role by insisting on such a reform as a condition for their assistance.

As mentioned before, the economics faculty is seeking a link with overseas universities in preparation for its Ph.D program. This should point to a need to set up international–regional networks linking up a number of departments, faculties, and research centers in both developed and developing countries for the purpose of promoting training programs, faculty and student exchange, and collaborative research. A network

established along the line of each discipline or area of specialization seems to be appropriate, because working through the same or similar discipline proves to be much more effective than dealing with a whole university system. Each discipline can provide a better focus and attention. A good example of such a network is that of the Southeast Asian business schools that played an important role in establishing a doctoral degree program in business administration jointly run by three business schools (National Institute of Development Administration, Chulalongkorn, and Thammasat) in Thailand. For the economics faculty, such a similar network could also enable the faculty to participate along with other institutions/foundations from Western countries in future efforts by Indochinese countries (Laos, Vietnam, Cambodia, and Myanmar) to build up their own economic research and training capacity.

The Thammasat experience demonstrates that several favorable factors, including overseas education, are needed in building research and training capacity in developing countries. It shows also that once the initial stage of capacity-building is accomplished, it is imperative to have linkage and incentive systems for maintaining and building on what has been achieved.

SECTION 5: THE CONTEXT OF HIGHER EDUCATION DEVELOPMENT IN THAILAND

Changing Labor Demand and Employment Patterns

Prospects for the future of higher education and research and development capacity in Thailand and appropriate future donor contributions, if any, need to be assessed against the future demands that are likely to be placed on this capacity by rapid economic and social change.

As summarized in the first section of the chapter, structural change in the Thai economy has been rapid and extensive.[1] Manufactured exports, including textiles and garments, sporting goods, toys, integrated circuits, rubber products, jewelry, and furniture have grown at more than 30 percent per year since 1986. These exports have been made possible by a combination of an abundant supply of low-wage, trainable workers, entrepreneurial and managerial skills, and appropriate macroeconomic policies. The Thai economy is one of the fasting growing in the world.

But there are both immediate and longer-term threats to the international competitiveness of semiskilled, labor-intensive exports, and export-led growth. Shortages of highly skilled personnel—engineers, scientists, and specialized technicians—are already evident and are a growing constraint both for the competitiveness of industry and the expansion of capacity for research and development.

There is also a clear pattern of industrial and formal-service sector hiring of better educated workers, particularly lower secondary graduates and above. The shares of those with elementary education in the employment composition of industries and services has declined substantially since 1977.[2] Workers with low education levels are being pushed more and more into low paying and less-prosperous segments of the economy.[3]

By 1995, labor force growth will slow due to the age composition of the population. Real wages will increase. Production and exports will need to become more skill- and technology-intensive in order to promote sustainable growth of the Thai economy and increases in living standards for the Thai population.

The demand for more educated workers will accelerate with forecasted structural changes in employment.[4] In export industry and in other jobs that pay well (public sector and private formal sector), there will be a need and preference for better educated workers. Different and more advanced skills will be needed in all segments of the labor market. At the higher end, skills will have to keep pace with rapidly changing technology and product sophistication. Although skill shortages are already evident and serious, particularly among engineers, manpower forecasts suggest that there may be growing shortages of bachelors-level graduates and postgraduates in all scientific and technical fields over the next 12 years.[5]

Structure of Education: An Overview

The accomplishments of Thai higher education and the building of capacity for national research as exemplified by the cases of Mahidol and Thammasat should be placed in the context of the overall education system. In part, this is because that system is shaped by a structure of higher education that has had the effect of protecting the quality of the countries leading universities—Mahidol, Thammasat, and four others. We begin with an overview of the education system, including financing, enrollment, enrollment ratios, and transition ratios.

Public Expenditures

Public spending on the education sector since 1982 is shown in Table 3. Overall expenditures have been a slightly declining percentage of the rapidly growing GDP and a slightly declining proportion of government budget, declining from 20 percent of the government budget in 1982 to 18 percent in 1990.

More than half of public expenditure goes to primary education. The budget shares of secondary and higher education have grown, while the shares of vocational schools and activities defined as other have dropped. The other activities include informal and adult education, which, along with vocational schools, prepare people for work and retrain those already in the labor force.

Public Provision

The level and distribution of public expenditures are important because government is the principal provider at all levels.

Table 4 shows that preuniversity education is provided mainly by government. In 1989, the proportion of total enrollment in public institutions ranged from 57 percent of secondary vocational enrollment to 90 percent of primary enrollment. The public shares of primary and secondary vocational enrollment have stayed nearly constant since 1978. The public share of preschool enrollment has increased steeply in response to a public policy decision to expand opportunities at this level. And the public share of academic secondary education has also increased as a result of public policy—through both the building and staffing of public-rural and municipal secondary schools and the many rules and regulations that the government imposes on private providers at this level.

Government is also the principal provider of university education, as shown in Table 5.

Because of the part-time enrollments in Ramkhamhaeng and STOU, it is important to estimate full-time equivalents (FTEs) when calculating enrollment shares of the various types of higher education institutions. If FTEs are equal to 25 percent of the nominal enrollment in these two universities,[6] then the public and private shares at the university level are as shown in Table 6.

Between 1983 and 1989, there has been a doubling of the FTE enrollment share of the private universities to over 20 percent of the total, a slow and recent increase in the FTE share of the public closed universities to nearly 40 percent of the total, and a decline in the FTE share of the open universities.

Overview of Enrollment Trends and Transition Ratios

Gross enrollment ratios—calculated by dividing enrollment at each level by the total population of school age for that level—are shown in Table 7.

Except at the preprimary level, the gross enrollment ratios have remained remarkably stable even as the economy has experienced rapid growth. Enrollment at the primary level is slightly below 100 percent because of dropouts, but the decline shown in the table is due to fewer overage students, repeaters, and reentrants in the data. In fact, the number of students entering the sixth grade and, presumably, completing primary school increased by 15 percent between 1981 and 1985.[7]

Above the primary level, the picture is different. Gross enrollment ratios at the secondary level are quite low,

at about 30 percent, lagging behind many Asian countries, even some countries such as Sri Lanka with less than half Thailand's current per-capita income. The low secondary-enrollment ratio reduces the pool of high-talent youths available to enter higher education and has serious potential consequences for the economy and for social equity.

Calculation of gross enrollment ratios in higher education requires the same kinds of adjustments as calculation of public and private shares. Students in the two open universities are not only part-time, but are of a much broader age range than students in the closed and private universities. Enrollment at STOU, in particular, is made up of adults already in the labor force. If no corrections are made, the gross enrollment ratio in higher education in 1989 was over 20 percent—unusually high for a country at Thailand's level of per-capita income.

Both Sussangkarn and the World Bank make adjustments for the part-time enrollments and older students in the open universities. Their estimates of the adjusted gross enrollment ratio in higher education in 1989 range from 8–10.5 percent.[8]

A transition ratio is the percentage of completers of one level who go on to the next grade or to the next level of education. Transition ratios in 1987 and 1988 and projected transition ratios to the year 2,000, are shown in Table 7. The most critical transition is from completed primary to lower secondary.

To illustrate the overall flow of students through the system and the consequences for higher education and other implications of this critical transition ratio, we have constructed a simulated cohort by assuming that the 1987 transition ratios have been constant for (up to) 12 years in the past. If the ratios had been constant, then of 100 students entering primary school:

- 76 completed primary school (the sixth grade)
- 31 entered lower secondary school
- 28 completed lower secondary
- 13 entered upper secondary and 8 entered vocational school
- 11 completed upper secondary and 6 completed vocational school
- 3 entered the closed and private universities, 5 entered Ramkhamhaeng, and 3 entered upper vocational institutes.

Completion of any level of education, except the highest levels, has two potential benefits. The first is the benefit that individuals receive in the labor market and in other activities throughout their lives because they completed that level of education. The second is the option benefit—the option to go on to the next level. It is clear in the simulated cohort that except for the transition from primary to lower secondary school, the option to go to some kind of further education is exercised by the vast majority of graduates of levels above primary school (for example, by 75 percent of lower secondary graduates who go on to upper secondary or vocational schools and by 73 percent of upper secondary graduates who go on to closed, private, or open universities).

In the simulated cohort, only 76 out of 100 students entering primary school complete the sixth grade. Dropouts are highest—11 of 100 students—between the first and second grades. Because of the dropouts and the low transition ratio of primary graduates to upper secondary (41 percent in 1987), a total of 69 of 100 entering primary students have left the formal school system for the labor market by the end of primary school, and of these, only 52 have completed primary school. In contrast, the numbers entering the labor market after having completed lower secondary and upper secondary are small.

Has the transition ratio from primary to upper secondary responded at all to growing employer demand for secondary educated workers?

As shown in Table 8, for most of the 1980s the transition ratio was stagnant and even declined. The absolute number of students going on to upper secondary increased because of higher enrollments and completion rates in primary schools. For example, between 1981 and 1985, even with the stagnant and declining ratios, the absolute numbers going on to lower secondary increased by 10 percent.[9]

Between 1986 and 1989, there was an increase in the ratio, perhaps in response to labor-market signals. Some of the increase is explained by an increase in the Bangkok ratio from 93 to 98, but some of the change has occurred outside Bangkok, though mainly in mu-

nicipal areas. Overall, even with the increase the ratio remains low.

Changing Enrollment Patterns in Higher Education

In the late 1970s and early 1980s, growth of enrollment in higher education was very rapid in response to social demand, reaching over 700,000 students in 1985. Most of this growth took place in the open-enrollment institutions. The open-enrollment universities held 82 percent of enrollment in higher education in that year—up from 70 percent in 1978, the private universities had 5 percent, and the closed-enrollment institutions the remainder.[10]

Since 1983, a somewhat different pattern has emerged. Total enrollments have stayed nearly constant. For example, in 1989, the total enrollment in private and Ministry of University Affairs (MUA) universities was 659,257. The new pattern is one of decreasing enrollment at Ramkhamhaeng (down from 546,277 in 1983 to 343,371 in 1989); steady enrollments (between 110,000 and 115,000) at STOU; rapid growth of enrollment in the private universities (up from 38,700 to 77,000); and slow but steady growth in the MUA closed-enrollment universities (from about 100,000 to 123,000). The open-university share of total students has fallen back to 70 percent, the share in 1978.

If corrections are made for FTE students, the open-university share has dropped from 54 percent in 1983 to 36 percent in 1989. Overall, between 1983 and 1989, the number of FTE students increased by only 10,200—a remarkable change from the buoyant growth of earlier years.

This change may be an early indication of future problems resulting from the current structure of Thai higher education. The objective of most students at the upper secondary level is higher education. The structure of higher education affects demand patterns (at least in the cities), curricular focus, and structure at the lower levels and even the demand for higher education itself. Regular patterns of influence of higher education on the rest of the system are seen in many countries. Social demand, selection mechanisms, labor markets, and the behavior of the system of higher education interact to create these patterns.[11]

Table 4
Percentage Share of Enrollment in Public Schools

	Pre-Primary	Primary	Secondary	Secondary Vocational
1978	43.4	91.0	77.7	59.0
1980	43.6	91.4	80.8	54.5
1985	59.4	90.0	88.2	56.9
1986	72.6	90.0	89.2	59.1
1987	75.7	90.8	89.6	58.7
1988	78.3	90.5	88.3	58.3
1989	73.9	90.5	89.7	57.0

Source: National Education Commission

Table 3
Public Expenditures on Education; Percentage of GDP and Percentage Distributions

	% GDP	Primary	Secondary	Higher	Vocational	Other
1982	3.7	54	17	12	10	8
1986	3.6	57	19	11	9	4
1987	3.3	58	19	12	7	4
1988	3.0	57	19	13	7	4
1989	2.8	57	17	14	7	5
1990	3.2	56	20	14	6	5

Sources: Calculated from data from the Budget Bureau and the National Education Commission

Table 5
Percentage Shares of University Enrollment

	Closed University	Open University	Govt. Share	Private University
1983	12.8	82.4	95.1	4.9
1984	14.7	79.0	93.8	6.2
1985	14.9	78.7	93.6	6.4
1986	15.5	77.2	92.7	7.3
1987	16.6	74.8	91.4	8.6
1988	16.8	74.7	91.4	8.6
1989	18.7	69.9	88.3	11.7

Source: Calculated from Ministry of University Affairs Data

Table 6
Percentage Shares of FTE University Enrollment

	Closed University	Open University	Government Share	Private University
1983	33.4	53.9	87.3	12.7
1984	36.1	48.5	84.7	15.3
1985	36.3	48.0	84.3	15.7
1986	36.8	45.9	82.7	17.3
1987	37.8	42.5	80.3	19.7
1988	38.1	42.4	80.5	19.5
1989	39.1	36.4	75.6	24.4

Source: Calculated from Ministry of University Affairs data

As the supply of higher-education graduates increases, employers prefer to hire the best graduates. Secondary graduates prefer to attend the best universities or to get degrees in the best fields. But best is hard to determine directly. Quality of higher-education institutions is, in practice, assessed by applicants and employers by proxy measures—by general reputation, by category of institution (non-university vs. university), by prestige of field, perhaps by anticipated rate of return, and above all by selectivity.

If, as in Thailand, places in closed-enrollment universities and private universities are rationed by examination scores, while places in the open-access universities require only completion of secondary school, then applicants will show a strong preference for admission to the selective institutions—even in less selective fields. The number of applicants sitting for the examination for entry into the closed universities has increased each year, the proportion admitted has decreased. Partially as a result, enrollment in the private universities has doubled despite high fees. The socio-economic status of students in the closed universities and private universities is virtually identical.[12]

This pattern explains part of the drop in enrollment in the open universities. Other explanations may include low completion rates, and, since the export boom, somewhat higher opportunity costs and thus less motivation for continuing to study at Ramkamhaeng.

Increased selectivity of higher education increases demand for high-quality secondary education. Quality at the secondary level is measured by parents by success of graduates on national tests and admission to the most selective universities, public and private.

In Bangkok and other cities, the demand for (perceived) high-quality places at the secondary level has had the predictable consequence of increasing demand and competition for places in high-quality, feeder-primary schools, and even in kindergartens and nursery schools. Extra payments to schools, private tutoring, and evening cram schools are also part of the pattern.

Since admission to selective universities is by national examinations, the examination not only reflects the academic curriculum in secondary schools, it increasingly dominates the curriculum. Intensification of student effort in most schools and upgrading of standards in some schools can be expected. But the focus may be narrower and the emphasis on better results on the examination, not enrichment of the curriculum as a whole or on student specialization and excellence in particular fields of interest—unless these happen to coincide with the content of the examinations. Furthermore, admission to the selective universities is to a field, not to the university as a whole, and there is significant variation in selectivity by fields. Some proportion of students may opt for less selective fields

in order to gain admission to more selective universities. This may alter where they put their effort at the secondary level. Students' real interests and perhaps their future creativity may by sacrificed to the admissions objective. This may be a particularly important issue for students strong in math and science but not able to gain admission to the relatively few places available in engineering and the sciences, reducing further the pool of potential researchers who will be needed in the future.

Prospects for the Future

The building, sustaining, and enhancing of Thailand's higher-education institutions and capacity for research and development have been impressive achievements on which the future development of the country will increasingly depend.

In this section, we review two issues: the problem of response of higher education to employers' increasing demand for engineering and other technical graduates; and problems in graduate education that may affect both higher education and Thailand's ability to increase capacity for research and development.

Responsiveness of Higher Education: Engineering as an Example

There are numerous employer reports of scarcities of engineering and other scientific and technical manpower.[13] Two studies by TDRI predict scarcities in some fields in the future.[14]

These graduates are produced mainly in the public closed universities and in private universities. Growth of the closed universities has been constrained by the fact that subsidy per student is highest at the higher-education level in the closed universities. Student fees cover about 6 percent of recurrent costs at these universities. Growth of engineering and related fields in the private universities has been constrained by the high capital costs of start-ups of these fields and, as will be seen below, the difficulty of finding qualified faculty with graduate degrees in these fields.

Some of the engineering and other skill shortages may be due to utilization problems, including relative pay. The MUA's own data show that less than half of university graduates report that their jobs make any direct use of their fields of study.[15]

Excluding government jobs, which now absorb far fewer new graduates, the proportion directly using their training ranged from 33–42 percent. More recently, only 53 percent of engineers in a sample of firms in Bangkok and Chiangmai said their jobs made any use of their training.[16]

Table 7
Gross Enrollment Ratios

			Secondary		
	Pre-primary	Primary	Lower	Upper	Combined
1982	10.9	98.9	32.0	26.6	29.3
1986	25.9	95.1	34.3	24.4	29.4
1987	30.3	94.7	32.8	24.1	28.5
1988	36.1	92.7	–	–	30.0
1989	33.6	92.2	–	–	30.4

Source: World Bank. *Thailand's Education Sector at a Crossroads*, Table 2.3.

Table 8
Transition Ratios: Primary to Lower Secondary

	Thailand	Bangkok
1981/82	39	–
1982/83	39	–
1983/84	39	–
1984/85	38	–
1985/86	37	93
1986/87	41	95
1987/88	43	95
1988/89	47	98

Sources: TDRI, 1986 Year-End Paper, and National Education Commission data

But there is also evidence of the supply constraints mentioned above in critical fields in the universities. Take bachelors degrees in engineering as an example. Bachelors degrees, in one or more of the engineering fields including computer science, are offered in seven closed enrollment MUA universities: Chulalongkorn, Chiangmai, Kasetsart, Khon Kaen, KMIT, Mahidol, and Prince of Songkla. Thammasat University recently initiated a B.A. engineering program as well.

Bachelors degrees in engineering are offered by the Institute of Technology and Vocational Education (ITVE), run by the ministry of education. Five private universities recently initiated B.A. programs: one in computer science, one in computer engineering, and one each in electrical, mechanical, and another engineering field.

Most engineers are graduated from the MUA closed-enrollment universities. Between 1982–1983 and 1985–1986, the number of engineers graduating from the MUA universities increased from 1,668 to 1,933. The number graduating from ITVE increased from 308 to 635. There were no graduates yet in 1985–1986 from the new programs in private universities.[17]

At first glance, these numbers seem impressive. Students and institutions appear to be responding to higher pay and high returns from engineering, particularly in the private sector. The number of ITVE graduates has doubled, though from a low base. The number from MUA universities has increased by 15–50 percent faster than the rate of overall growth of enrollment and graduation from the closed universities during the period. But the MUA numbers are misleading. Over the same four years, the number of basic science graduates decreased from 833 to 601. If that decrease is subtracted from the increase in engineering graduates, the net increase in science and engineering graduates combined was only 33.

Students are indeed responding to the higher returns of engineering degrees and the relatively low returns of basic science degrees. They have shifted fields. But the MUA universities appear to have shifted capacity, not to have added much, if any, new capacity. Budget constraints and low fees may be the reason.

Average annual recurrent and capital costs per student in engineering in 1985 in six of the closed-enrollment universities were estimated at 56,000 baht.[18] Fees and other student charges ranged from 3,500 to 4,500 baht per year. ITVE annual recurrent and capital costs were estimated at 43,000 baht; fees and other costs to students were just over 3,000.[19]

While changes in the fee structure will be necessary to address the fiscal and faculty constraints of the closed universities, the problem of faculty development and retention in scarce fields may persist even with changes in fees and compensation. The new engineering program at Thammasat, for example, has been able to hire only one Ph.D and a few M.As in the field. The bulk of the teaching is being done by B.A. engineering graduates with a few years' experience. This should be compared to the economics faculty at Thammasat where much of the teaching is done by Ph.Ds.

In some of the private university engineering programs, the teaching is done by closed-university faculty who moonlight to augment their civil-service salaries.

Graduate Education and Research and Development

Graduate education has become increasingly important for Thai development and is increasingly under threat.

Graduate education is important for training the next generation of faculty for the existing universities, for expansion of those universities, and for staffing new universities in the provinces. It is important for meeting increasing private-sector employer demand for highly skilled scientific, technical and managerial leadership, and for expansion of capacity for research and development both within the universities themselves, which is critical for new faculty development, and in private firms or groups of firms.

As was discussed in Section 1,the fundamental reason for building research and development capacity in middle-income counties is so that they will become increasingly able to access and adapt new discoveries and technologies in order to make the small discoveries that lead to sustained increases in productivity and international competitiveness.

Yet even this view of research and development has important implications for quality of higher education, particularly for the development of research scientists. For long-term sustainability, it is not only engineers and technicians for industry that the universities and technical institutes must supply; they must

also help build in industry and in their own faculties an expanding capacity for research and development. With this expanding capacity, the country would have an increasing ability to draw upon and assimilate the world's scientific and technological resources, to support new industries and new exports, and to upgrade the old.

However, the picture at the moment is not very encouraging. Faculty in key fields are being hired away by the private sector, and to a lesser extent by new universities and new programs in these fields at existing universities. There is thus a real threat to the nation's ability to train the next generation of faculty and the highly skilled manpower increasingly needed in industry and formal-sector service firms.

Structural constraints at the university level created by the subsidy of students and the pay structure of faculty would begin to help solve the problem, but support for graduate fellowships and for competitive awards to stimulate research and increase compensation of faculty may also be needed.

Possible Interventions and Options

As is inevitable and appropriate, most of the options and potential solutions require changes that will be made by Thai decision makers, Thai institutions and the Thai government. These options would be to:

- Allow some initially small proportion of students already enrolled to shift fields after one or two years so that the response to market changes will be more rapid and the market orientation of students and of universities and faculties will be increased.
- Increase fees in the public, closed universities as a way to redress inequities and to expand capacity in these institutions.

Many students of the same socio-economic status as those who attend "closed" universities are able to pay the much higher fees of the private universities. This is not a new issue; the arguments in favor of fee increases are well known and widely accepted. How to take the needed steps, however, is still not clear. The weight of evidence is that fees at the higher level could be raised with no decrease in demand and with revenues increasing in direct proportion. This may even be the case if only one of the selective institutions or fields increased fees and the others did not. This possibility was confirmed in LOGIT demand estimations and repricing simulations recently done for Thammasat by Sirilaksana Chutikul.[20] But cost recovery will have to be part of a package of scholarships, student loan schemes, or a tied scholarship scheme (which is a disguised form of loan; repayment occurs when scholarship recipients are obliged to work for pay that is lower than in alternative employment). In the process, equity and efficiency would not conflict since higher fees allow expansion of places that could be earmarked for the disadvantaged. What is needed now is political will and a guarantee that existing government subsidies will not be immediately withdrawn from fee-increasing institutions. And since universities retain fees and faculty members are underpaid and forced to moonlight (hurting both teaching and research), the prospective connections between pricing policy and quality improvement—as well as quantitative expansion of the critical fields—are clear and compelling.

- Create election mechanisms that place some weight on students' records in secondary education and that defer decisions on fields until later (that is, which admit the applicants to an institution of higher education, not initially to a field).

Such mechanisms might further reduce the intense focusing of the secondary curriculum on single examinations, lessen the danger that students will forego pursuing their real interests and perhaps their future creativity to the examination process, and improve university and student response to changing market demand.

Furthermore, there are three options in which foreign collaborators and foreign donors might play an important role. These options would be to:

- Help establish international universities or branch campuses of high-quality international universities (as has happened in Japan) with high standards, international faculty, and graduate programs to add capacity and to induce reform in Thai universities.
- Support a highly targeted and sustained program of Ph.D fellowships for faculty training in critical fields—where possible for graduate training *in*

Thailand—thus strengthening graduate training in the country; where this is not yet possible, then training programs abroad could be supported instead.

- Support a program of competitive awards to stimulate research and increase compensation of faculty.

SECTION 6: CONCLUDING COMMENTS

In considering the significance of the success of Mahidol and Thammasat Universities in contributing to Thai development through teaching and research, the question immediately arises as to whether the achievements were possible in Thailand because of some uniquely favorable cultural, social, or economic factors that cannot be replicated elsewhere.

Favorable Factors

A number of factors can, in retrospect, be seen to have been exceptionally favorable to the institution-building enterprise in Thailand, although none is necessarily unique to the country. These circumstances need to be examined before we consider the program elements and policies that contributed to the development of such effective institutions.

The first factor outside the control of those directly engaged in institution building is the remarkable ability of the Thai culture to accept and incorporate foreign knowledge. This is particularly true in the health field. Health is so vitally important to people everywhere that traditional beliefs concerning causality and prevention are deeply rooted, and acceptance of modern scientific knowledge is consequently often impeded.

The role played by King Chulalongkorn and succeeding members of the Thai royal family in according prestige to modern science has doubtless been very important in overcoming cultural obstacles to universal scientific standards.

A second favorable factor has been the rate of economic growth. A healthy rate of economic expansion not only made it possible to meet the increasing financial requirements of these institutions, it also helped to create demand for their students and research results.

Government support for higher education increased during this period more rapidly than the economy grew, and even more rapidly than expenditures for the government as a whole. The GDP increased by 4.4 times from 1965–1977, while per-capita income tripled, and total government expenditures increased by 5.3 times. Expenditures for public universities expanded almost 7 times in the same period.

One would anticipate that political stability was another prerequisite to successful university development. But as we have noted, two coups took place during the time the UDP was active, and in one of them, the students of Thammasat were on the barricades. Possibly the periods of turmoil at the top of the government have been surface phenomena, with relatively transient impacts on institutions.

Policies and Program Elements

Many good decisions have, of course, contributed to the quality of Thammasat and Mahidol Universities since the early 1960s, and observers may differ in trying to identify which marked critical crossroads. We have drawn upon the views of earlier evaluators of the UDP as well as the experience of Thai academic administrators to search for consensus on what policies and strategies have been most critical for success, not only during the UDP period, but also later, when the institutions sustained and enlarged their earlier achievements.

Coleman focused upon four factors as being most important to Mahidol's success; these also pertained to Thammasat during the UDP era:

- Early agreement on a concrete, detailed plan of action, with specific objectives and carefully scheduled activities;
- Scrupulous fulfillment by the Thais of all their undertakings in the collaboration, including provision of buildings and augmentation of recurrent budgets as foundation support phased down;
- Full and adequate funding by the foundation for fellowships, field staff, scientific equipment, and library materials during the initial stages; and
- The creation by Thai authorities of attractive and competitive working conditions for returning scientists.

Each of these points continue to warrant the importance Coleman ascribed to them. Other critical factors that might be added to them include the following:

- The decision to emphasize high-quality graduate education. Initial upgrading of the undergraduate curriculum at Thammasat was undertaken explicitly in order to provide qualified intake for the masters degree program when it was established. Graduate studies were the primary focus of attention for the UDP in both institutions;
- Continuity and quality of technical personnel. The Rockefeller Foundation scientists were recruited to serve as acting department heads at Mahidol University until qualified Thais were available to replace them. At Thammasat, Rockefeller Foundation staff were similarly highly qualified and committed;
- Dedication to international standards while addressing local problems. To this day, publication of two articles in an international journal is one of the requirements for Ph.D candidates at Mahidol. Yet the research agenda of Mahidol scientists is not determined in the countries where most of these journals are published. The STDB and the NEBT provide opportunities for Thai scientists to participate in setting the national research agenda, and provide the funding necessary to work on it.

At Thammasat, publication in international journals has not been emphasized, perhaps in part because economic issues tend to be less universal than medical issues. In any case, few economists at present find the incentives for international publication to equal the added effort that would be required. This may change as the university adds a Ph.D program next year.

Implications

If it is accepted that Mahidol and Thammasat Universities are excellent institutions for teaching and research, and that they have contributed directly and importantly to the rapid economic and social development of Thailand, then three further issues arise: What are the implications of the Thai experience for other universities and their supporting organizations? Can Thai universities themselves contribute to university development programs elsewhere in the world? Are existing mechanisms for cooperation between U.S. institutions and universities or other research institutions in advanced developing countries, such as Thailand, adequate to serve U.S. and Thai mutual interests?

Concerning the implications of the Thammasat and Mahidol University experience for other universities and their supporting organizations, it appears that universities are at last returning to favor as legitimate

objects of international donor attentions after a decade and a half of neglect.

During the era in which donors focused narrowly upon programs to meet the basic human needs of people in the recipient countries, universities were beyond the pale. Now, especially in Africa, a number of programs offer assistance to universities on a wide variety of subjects ranging from university management practices to research networking in a number of fields. Recently, a report by Professor Trevor Coombe of the University of London, commissioned by the Ford and Rockefeller Foundations for consideration by the Donors to African Education Working Group at the World Bank, described the current conditions in the universities and proposed avenues for coordinated donor assistance.

Notably, most of the currently available assistance to African universities is channeled through horizontal programs such as research networks. None offer the sustained, detailed attention to the development of institutional research and teaching capacities that characterized the UDP in Thailand and elsewhere. Quite possibly the cost of a vertical program would be considered prohibitive; few donors are now likely to invest $40 million in a single institution. Certainly the foundations no longer have resources of that magnitude for the development of Third World institutions.

Yet foundations bring a special ingredient to university development that other donor organizations find difficult to replicate. Professor Coombe points out that the Rockefeller and Ford Foundations are regarded by many African academics as associates and adjuncts to the university community.They enjoy remarkable confidence and trust based on their efforts over the years to strengthen African university institutions.

Possibly some pooling of international resources for university development could take place with foundations in the organizing role. Rockefeller and Ford stimulated the establishment of the Consultative Group for International Agricultural Research (CGIAR) when the research centers they had spawned warranted support beyond their means. Perhaps a similar consultative group could be formed to offer sustained support to qualifying universities.

To qualify for the commitment to sustained support, institutions might be required to enter into a planning and negotiation process, assisted by a foundation-run secretariat, whereby a detailed action plan similar to those drawn up for Mahidol and Thammasat would be agreed upon, with the commitments required of the university, its host government, and the donor community carefully specified.

Such a program could offer recipient institutions a mechanism for ensuring the financial assistance required for development, and at the same time exact certain guarantees from host governments concerning not only financial resources but admissions levels, standards, and assurances of specified academic freedoms.

Concerning the potential contribution Thai universities could make to other institutions in developing countries, there are at present, even within ASEAN, limited opportunities for collaboration. Singapore and Malaysia already have relatively strong institutions of higher education, but the states of Indochina could benefit from sending students to Thai universities and receiving technical assistance through consultations and research. Limited bilateral assistance is currently provided to Laos using higher-education resources, but it is likely to be constrained by both budgetary and political factors.

In any event, bilateral relationships are unlikely to utilize the full potential of Mahidol and Thammasat for assistance to other countries. Domestic demands for education, research, and services remain greater than can be easily met, so the incentives for university administrators and the government to seek ties with institutions in developing countries are not great. Yet the teaching and research experiences of these institutions must be more pertinent to universities in the Third World than those of universities in industrialized countries.

Some sort of triangular mechanism may be needed, through which Mahidol and Thammasat would benefit at least as much as they contributed. Through such a mechanism could flow exchanges of students and teaching faculty, plus collaborative research and consultations, as well as financial resources. The third partner in such an arrangement, joining a Thai institution and one or more in another developing country, could be a foundation or a university with funding supplied by a donor organization.

Finally, concerning U.S. institutional mechanisms for maintaining cooperation with universities in advanced developing countries, the subject has become more urgent than anticipated, with the U.S. decision to close the USAID Mission in Bangkok following the military coup of February, 1991. The USAID program was scheduled to phase down in an orderly manner anyway in a year or two, but legislation governing USAID has forced a more abrupt termination of cooperation.

This sharp break could afford an excellent opportunity for both the United States and Thailand to examine what, in terms of their own interests, each is losing from this event and how future research relationships might ideally be organized. Such an analysis will doubtless be made within official circles once conditions constraining cooperation are relaxed, but official analyses tend to be so sensitive to immediate budgetary considerations that they have little license for speculation about desirable activities currently insupportable.

Institutional mechanisms for promoting scientific and technological cooperation with developing countries have been proposed in the United States periodically over the past 30 years; the most recent to receive serious congressional attention being a Brookings Institution study recommending an institute for the purpose. As the turn of the century approaches, the list of subjects on which the United States and advanced developing countries share research interests seems only to gain urgency, particularly in medical, environmental, and economic areas. Perhaps a case study of the potential costs and benefits of greater collaboration with Thai research institutions such Mahidol and Thammasat universities could illuminate the issues involved for both the United States and Thailand.

In this brief concluding section we have not attempted to mine the lessons of past collaboration in university development to the extent these remarkable institutions deserve, but even a cursory look at their achievements and potential offers encouragement to further effort. The contribution institutions of higher learning and research can make to the development of their countries has, in our opinion, been undervalued in the literature and the programs of international donors. We hope that the examples of Mahidol and Thammasat will prove useful for those engaged in building research capacity elsewhere.

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Chapter 8

Overseas Education and Civil Society: A Tenuous Embrace

Jorge G. Castañeda

Education abroad has been an important characteristic of Latin American elites for a long time. Intellectuals have read, traveled, written, and worked overseas since the nineteenth century, and the region's often splendid technical teams have been trained abroad, certainly since the turn of the century and in many cases before. Similarly, the highly profiled, influential, and on occasion disproportionate role that the intellectual has played in Latin American political life has also been a constant of the continent's history, perhaps dating back to independence and earlier. But the way in which these longstanding traits of Latin American life fit into the new, unprecedented context created by what has been often called the "explosion of civil society" in the hemisphere over the past decade is far less clear. Each one of these broad trends is worth reviewing briefly before proceeding with a more detailed analysis of the specific—and somewhat exceptional—situation prevailing today in Mexico with regard to the role of overseas education in the growth of civil society.

The Role of the Intellectual

Intellectuals have always fulfilled a central function in Latin American societies and politics. Since independence and throughout the nineteenth century, partly because of the importance of European traditions (mainly Spanish, French, and English traditions, depending on the country), and partly as a result of the weakness of representative institutions, key intellectuals occupied a decisive space in many Latin societies. Domingo Faustino Sarmiento, in the foundation of Argentina's army, educational system, and immigration policy (and also in rationalizing the massacre of the remaining native population); Rui Barbosa in the struggle against slavery and in the establishment of the republic in Brazil; and countless Mexican journalists, historians, and politicians from Valentín Gomez Farías to Ricardo Flores Magón in forming Mexican national identity: The thin line between intellectual activity and political activism made for a tenuous distinction as much then as now. Political parties were frequently nonexistent or unrepresentative, electoral systems were purely formal, and nation-building was incomplete. In the vacuum created by these absences, the role of the intellectual stood out. This role persisted, although Latin America changed dramatically by the beginning of this century (and even more so during its first decades) and some of the causes that had led to this intellectual high profile disappeared.

As keepers of the national consciousness, critics and constant demanders of accountability, and bulwarks of principle and honesty, intellectuals have acted as substitutes for institutions and individuals who were either unable or unwilling to fulfill such functions. Fray Bartolomé de las Casas struggled to protect the Indians in New Spain; others have, through their writings, teachings, speeches, and other activities, assumed important social responsibilities. Lawyers, poets, jour-

nalists, historians, priests, university professors, publishers, and translators played central roles in building most of the hemisphere's nations. Needless to say, not all Latin American intellectuals nor even a significant majority of them acted this role, but enough of them did so that intellectuals came to occupy in many Latin American nations a place that no other society really granted them.

As the twentieth century wore on, intellectuals continued social activism through revolutions and reforms, opposition to coups and dictatorships, through education, culture, and the media. Where structured, enduring political parties finally did emerge; intellectuals participated in their leadership or in their programs. When the mass press finally surfaced in some Latin American nations, they occupied its editorial pages and newsrooms; when modern university systems began to blossom, they contributed decisively to their creation or reform, often giving university reform movements a scope and lasting influence far beyond their intrinsic merits. It is anecdotally worth pointing out that Don Arnaldo Orfila, who as a young student had participated in the Córdoba University Reform Movement of 1918, was still the publisher of Siglo XXI Editores, the continent's most important social sciences publishing firm, as recently as 1989.

In the more recent past, as Latin America underwent the traumatic events of the 1970s and 1980s—coups, dirty wars, revolutions and counter-revolutions, torture, book burnings, and intervention and internationalization of regional conflicts—intellectuals continued to be key actors on the political stage. Throughout the long night of South American military dictatorships and civil wars, intellectuals denounced human rights abuses, resisted attempts at censorship, opposed authoritarian rule, and on many occasions became the consciousness of that part of society that disapproved and rejected the brutal methods of authoritarianism.

In Brazil, during the most repressive years of the military dictatorship, lawyers, journalists, bishops, social scientists, and musicians played a crucial role, first in leading the struggle against repression, then in ensuring a peaceful and inexorable—albeit lengthy and slow—transition toward democratization. In Argentina, psychoanalysts and journalists, together with novelists and human rights activists, were in the forefront of the fight against the dirty war; it was no accident that the Alfonsín government that presided over the end of the nightmare handed the task of reviewing the past and coming to terms with it to a commission headed by one of the country's leading novelists. And in Peru, where a substantial segment of society turned against the chaos plaguing the country, often assigning equal blame to the guerrilla movement and the social-democratic government of Alan García, the country's most distinguished writer was prevailed upon to lead an elective coalition against the trends deemed responsible for the country's troubles. There are countless other examples. The role of the intellectual in Latin America remains intact: It is still as important, as high-profiled, and as influential as in the past. If anything, this role has been enhanced by the explosive growth of civil society.

A Bridge to the World

Perhaps one explanation for the central role of intellectuals throughout Latin American history can be found in the nature of the gaps they have attempted (more or less successfully) to bridge. To a large extent, intellectuals in Latin America have served as links or switches between two sets of separate actors that have often proved incapable of communicating directly with one another. Intellectuals have been situated exactly at the seam that unites Latin America and the rest of the world and also in the space between a strong state and a weak civil society—in most of Latin America for most of the time.

Latin America has been a major importer of ideas, ideology, social theory, and doctrine almost from its birth as a collection of independent nations, and perhaps even since the early colonial era. Constitutional liberalism was imported from Europe and the United States early in the nineteenth century, frequently in total disregard of its local appropriateness. Constitutions and legal codes were drawn up and promulgated one after another, while, simultaneously, civil wars, armed bands, foreign intervention, bondage, disenfranchisement, and even slavery were the true characteristics of national life.

In the early twentieth century, and more markedly from its second decade onward, Marxism and Leninism were imported as well, and they were as unadapted and possibly unadaptable as constitutional liberalism was to the conditions of the time. Marxists sought to

build orthodox working class parties where there were no workers, to distribute nonexistent wealth, and to lead revolutions on behalf of the smallest of society's minorities. And today, as if nothing had been learned from the past, free-market radicalism, also known in Latin America as neoliberalism, is being brought in by ship and by fax. This doctrine is establishing a remarkable uniformity of economic and social policies throughout a region whose diversity is matched only by its resistance to such force-fed imports.

Private sectors that scarcely exist as such, or that have never proved willing or able to carry their load, are suddenly being handed responsibilities that even their European or North American counterparts have had trouble shouldering. Policies that barely brought about desired results—often with dramatic unintended consequences in terms of inequality and injustice—in middle-class, affluent societies, are being pursued in nations where nearly half the population is overtly poor and where at least two-thirds cannot be classified as even "middle class."

But societies do not import ideologies; their ideologues, that is to say their intellectuals, do. As long as can be remembered, Latin American intellectuals have played a key role in this frenzy of importing new ideas; in a sense, they have been similar to the operatives of local import firms, like Sacony and Speed in the British colonies of yesteryear. Intellectuals have been the bridge between the rest of the world and Latin American political and economic elites. They have traveled the world seeking out new ideologies, have assimilated them, and have prepared them for shipment and local consumption. From the very beginning, the region's intellectuals studied abroad. Countless contemporary Latin American intellectuals have lived overseas—from Mexican writer–diplomats Jose Gorostiza, Carlos Fuentes, and Octavio Paz; to Mexico's muralists who painted in Paris, Detroit, New York, and Pasadena as much as they did in Mexico; to Colombian novelist Gabriel García Márquez and Chilean poets Gabriela Mistral and Pablo Neruda. The overseas sojourn from Latin America stretches back to Jose Martí and many others in the nineteenth century.

Of course Latin America's distinguished intellectuals, as well as its lesser known, and often more influential intellectuals, did not hold a monopoly on contact with the rest of the world. Even in the late nineteenth century, elites in Latin America were sending their sons to be trained abroad and acquire the technical expertise needed to run emerging industry; burgeoning modern services in medicine, law, banking, transportation, and communications; modern statehood; and rapidly modernizing, though often enclave-bound, agriculture. These members of the Latin American *jeunesse dorée* were also a means of foreign influence, but of a slightly different nature. They brought back the ideological tenets of their acquired disciplines and skills. In the nineteenth century, this meant the highly positivist, progress-oriented world view; they were clearly inclined to modernize their nations. Some older intellectuals shared these beliefs, and the result was a powerful dominating ideology in elite and governing circles. The ideas were transmitted by groups such as the *científicos* in Porfirian Mexico or the Comtian-positivist *ordem e progreso* intellectuals, for example, Guimarães Rosa, Rui Barbosa, and the founders and rulers of the Brazilian Velha Republica.

Herein, then, lies a foundation for explaining the decisive role of intellectuals in Latin society. It stems partly from the function they performed, that of linking a region hungry for ideas, experiences, and doctrines from abroad and the world where those ideas had their beginnings. But this only explains part of the phenomenon. The societal role of the intellectual also originated in the enormous gap that existed between the traditionally stong state and a chronically weak civil society—a gap that survives in Latin America today but on a lesser scale.

Substituting for Institutions

If one looks closely at the way intellectuals have functioned in Latin America, it seems that they serve as a substitute for ill-functioning or nonexistent institutions. They write, speak, or advocate what social institutions or groups generally do elsewhere: fight for labor rights in lieu of unions; denounce human rights abuses in the place of judges or the courts; denounce injustice, oppression, and electoral fraud on behalf of weak or nonexistent political parties; write pamphlets revealing and condemning corruption, instead of the press; and call for the protection of the environment, in place of embryonic or yet-to-be created ecological groups. Indeed, their fundamental role often springs more from need than from the intrinsic desires, capabilities, or merits of the region's intelligentsia.

The reason for this phenomenon of substitution is evident and has been analyzed in countless histories and studies of Latin American politics and societies: the weakness of civil society and the (relative) strength of the state. Latin American societies evolved without developing strong civil sectors (except for the church, but the feeble separation of church and state for many years explains this anomaly). The causes need not be reviewed here. It is sufficient to say that, throughout the hemisphere, the state—colonial or independent—emerged before the nation was truly constituted as such. This led to an overpowerful state relative to civil society once the nation-state was created. Labor unions, political parties, professional associations, mass media, regional groups, peasant cooperatives, etc., are all institutions that have been present in Latin America, but they lacked the strength they attained elsewhere and thus were not truly able to serve the same purpose. But politics and society, like nature, abhor a vacuum: Intellectuals took up the social missions of weak institutions.

The type of role intellectuals would play depended on the vision of the world they acquired. The rest of the world's influence on Latin American culture, ideology, and even politics rested on the intelligentsia's role as communicators. And the kind of foreign education they received, in the broadest sense—not only in school but in life also, on campus and off, in being trained and taught, but also in acquiring a broad academic and philosophical outlook—would be decisive in determining the message they transmitted.

During the 1980s and through the beginning of the 1990s, Latin America suffered its worst economic and social crisis since the Great Depression. At the same time, despite serious, enduring shortcomings, the hemisphere enjoyed its most widespread, substantive, and lasting process of democratization in the twentieth century. The conjunction of both developments enhanced the relevance of social change and political alternance in Latin America like at no other time since the 1930s. With the exception of the U.S.-supported, civilian-military regimes in Central America, where elections were held but meant next to nothing, and Mexico, where change continued to occur at a frustratingly slow pace, democratization movements in most fields of political enterprise took place throughout Latin America. This trend went well beyond the simple institution of elections. It included a new-found respect for human rights in the former Southern Cone dictatorships and an opening up of the press, unions, and related sectors of civil society in Brazil and other nations. In virtually all of the nations of the continent that underwent this democratization, what became known as the "explosion of civil society" was a central feature.

Civil Society in Latin America

What is generally meant by the explosion of civil society that took place in Latin America during the mid-1980s is the blossoming of myriad institutions and grass-roots movements in the course of the struggle against the authoritarian dictatorships left over from the previous decade. As parliaments and political parties were abolished, discredited, or repressed, and as previously existing labor unions, peasant leagues, squatter associations, and university groupings disappeared or were rendered powerless or illegal, other, newer movements, forms of organization, and political and social expression sprang up. One of their chief characteristics—and thus the expression civil society—lay in their dissociation from the state for the first time in Latin American history. Until then, most forms of political expression in the continent were state-induced or state-involved: They took place within the state (understood in the broadest, Hegelian sense) or "about" the state in the form of political parties, congresses, corporatist state-organized unions, and other institutions or movements whose main purpose or mission was to obtain or share state power.

But because the authoritarian dictatorships of the 1970s in Chile, Argentina, Brazil, and Uruguay, among others, left little or no room for alternative expression, and because the resistance to the oppressive, often brutal action of the state had to come from without, the new movements that emerged were largely exterior to the state. Human rights groups in Chile, Argentina, and Brazil; grass roots labor unions in the Sao Paulo industrial suburbs; squatter associations in Lima and Santiago; church based communities in Brazil, Chile, El Salvador, and elsewhere; higher education associations; and new journals, dailies, and media initiatives: all of these, and many more movements throughout the continent, flourished in the struggle against the dictatorships. They did not always outlive the

dictatorship's downfall, but they did leave a lasting impression on Latin America's social and political landscape.

Again, intellectuals played a key role in this explosion: conceptualizing it (the Chilean FLACSO school), narrating and socializing it (Carlos Monsiváis in Mexico), leading it in its demands for justice and human rights (Nobel Peace Prize winner Adolfo Pérez Esquivel in Argentina), or symbolizing it and channeling it into political expression and structured political parties (as the Brazilian singers and intellectuals did, respectively, throughout the process of *abertura*). While many of the original factors that had led to the intellectual's high profile in Latin American for centuries were beginning to change, these same intellectuals served a fundamental purpose in the transformation. Even as the civil society for which intellectuals had traditionally substituted finally began to thrive, its stand-ins kept contributing enormously to its progress. One of the reasons for this ongoing prominence was the spectacular growth of higher education throughout the hemisphere.

The Expansion of Higher Education

If, with time, education abroad would become a virtual necessity for elites in Latin America (before it had been desirable, but not indispensable), it was in part because higher education *at home* ceased to be an elite experience in the 1960s and 1970s. During this period, millions of teenage Latin Americans went to college for the first time. They were a Latin American baby-boom: the sons and daughters of the urban dwellers who, from the late 1940s and early 1950s onward, no longer lost their children as infants, but did not stop having them either. Suddenly, there was a broad constituency for intellectuals in Latin America—the millions of university students who sat in on emotional lectures; read incendiary pamphlets and treatises; went on strike; demonstrated against the system that gave them free, universal higher education; and sometimes went off to the mountains to take up arms against it. The figures in Table 1 suggest the magnitude of the extraordinary expansion in university enrollment in Latin America throughout this period.

The importance of the rate of increase between 1960 and 1980 cannot be overestimated: ranging from simple duplication in Argentina, where higher education was extended to the middle class earlier in the century, to 10- to 15-fold increases in Mexico and Brazil, to a Peruvian student population that grew by nearly twenty times over. Increases in faculty and administrative staff were analogous: higher education became a central feature of most of Latin America's development during this period. Regional universities became centers of political and cultural activity in areas where they had vegetated for years or had simply not existed; they also became power bases and budgetary items. And from Puebla and Sinaloa in Mexico, to Ayacucho and Concepción in Peru and Chile, universities rapidly became hotbeds of radical political activism.

Table 1
University Enrollment in Selected Countries of Latin America: 1950–1990

	Argentina	Mexico	Chile	Brazil	Peru
1960	76,982	180,796	95,691	25,452	30,967
1968	192,472	265,303	282,653	52,937	83,509
1970	247,637	236,515	430,473	78,430	108,535
1975	520,194	536,959	1,089,808	149,647	186,511
1980	817,558	397,828	1,409,243	120,168	246,510
1987	1,288,800	707,016*	1,470,555	156,755	409,654

*Mexico data are from 1986. Source: Unesco, *Statistical Yearbook*, 1970, 1982, 1989.

In Mexico the student riots of 1968 shook what Mario Vargas Llosa later called "the perfect dictatorship" so severely that it proceeded to spend billions of dollars in the following period to co-opt the same students that it had fired upon at the Plaza de las Tres Culturas. In Peru the educational effort of the 1950s and early 60s was developed and intensified under the reformist military rulers that took power in 1968. In Brazil an anything but reformist military regime also spectacularly expanded enrollment in public higher education. At the same time the regime was torturing and jailing students, it was also co-opting them with the promise of social mobility and cultural enlightenment. In Chile the same trend led to the social effervescence of the 1960s and the popular movement that brought Salvador Allende to the presidency in 1970. In Uruguay the Tupamaros were the typical outgrowth of the "new" university.

These countries were, more often than not, unready for such extraordinary expansion of higher education. Teachers were ill-prepared or unavailable; secondary and even elementary education remained deficient at best; jobs did not exist and would not be accessible if and when the increased numbers of students graduated. The ensuing politization that shook many universities was unavoidable, as centers of higher education became stakes in political games that actually gave low priorty to educational quality; these games were the inevitable by-products of education's increasingly mass-market nature. With time, many politicians and intellectuals across the political spectrum would conclude that the outcome of the entire process—that is, the progressive dismantling and increasing irrelevance of public higher education in Latin America in the 1990s—was a fatal consequence of the exponential growth of the previous decades. For a span of nearly twenty years, millions of Latin American students entered a university system seeking answers to questions that their parents lacked the knowledge to even ask.

During this period, nearly every Latin American government also founded institutes of science and technology (CONACYT in Mexico, CONICET in Argentina, CONICYT in Chile) with the hope of encouraging basic research, putting order and planning into scholarship-fed education abroad, and re-establishing guidelines for the burgeoning number of universities. Long a question of dignity in Latin America, the ability to educate governing political cadres, intellectuals, and business managers at home became a source of pride during these years. It would not last.

But this was not the only role intellectuals and foreign education played in the remodeled Latin America of the 1980s. Indeed, almost at the same time that Latin America was beginning to awaken to the joys, frustrations, and complications of a stronger, more vibrant civil society, it was also undergoing a major ideological reformation, at least within the ranks of its technocrats, administrators, and business communities. For the first time in recent Latin economic and ideological history, the economic, financial, and upper-level-administrative civil service *cum* technocracy, all built up painfully and expensively but more often than not successfully over the years, adopted the radical free-market, privatized, open-economy philosophy to which a part of the Latin American business sector had always subscribed. This was no minor paradox. The economic, financial, and administrative civil service had become its own strongest constituency and the principal source of support for the creation and conservation of a strong state and its redistributive role in the economy.

The ideological transformation also affected the private sector. Previously, despite a marked overall free-market inclination, divisions and various nuances had existed in the Latin American business community. But during the 1980s and the early 1990s, a consensus had developed in favor of the conservative ideological tide sweeping in from the United States and Great Britain. Nonetheless, the main change took place within the ranks of public servants. Whereas many of the offspring of Latin American businessmen, who since the 1950s began receiving their MBAs in the United States, were already firm believers in free-market radicalism when they began their studies, this was much less true of the technocrats trained in conservative American economics departments. Private sector, young MBA students came from private business administration schools in Latin America; their public sector counterparts came from the rough-and-tumble world of public university student politics and freewheeling ideological debate. The former came to the United States to perfect skills and confirm previously ingrained values; the latter tended to be converted, at least insofar as they constituted a relatively homogeneous, structured corps.

The Role of Overseas Experience

Many observers of the twin changes occurring in Latin America over the past decade have emphasized the role overseas education and travel have played in these transformations. In summary, it can be stated that overseas education, now as before—with the obvious overwhelming exception of military education abroad—played a key role in strengthening civil society in Latin America. However, it did so in a contradictory and inconsistent way. Certain types of higher education abroad significantly reinforced the trend toward a robust civil society in Latin America. Other forms had a negligible impact, and still others worked against it. In some countries "forced" overseas education played a stronger role than "programmed" (or optional) education abroad. Finally, the precise impact depended on who was studying abroad and what and where they were studying.

Higher education abroad was central in both evolutions: the strengthening of civil society and the conservative sea-change in economic policy that affected the hemisphere. From *Newsweek Magazine*[1] vaunting the new Latin American old-boy network of like-minded, free-market converts (graduates of MIT, the University of Chicago, Harvard, Yale) in official positions who share the same worldviews as their professors and friends in the United States and the multilateral agencies, to the importance attached by many Chilean thinkers to the period of exile in the renovation of the Southern Cone left, overseas education has been a major factor. Moreover, the relative weight of each of the two transformations had a great deal to do with the exact nature of the foreign education involved. It would not be an exaggeration to say that by looking at the most significant foreign education variations from country to country—the motivations, origins, and geographical and disciplinary destinations—a great deal can be learned about the differences between countries regarding both the strengthening of civil society and the influence of free-market radicalism.

One of the first hypotheses to come out of the often spotty, heterogeneous, and sometimes unreliable data available on overseas education in Latin America is that geographical destination has had a significant impact on foreign education's contribution to the strengthening of civil society. The country where students get their higher education is important not only because of the type of education they receive there, but because the overall environment in which they are immersed has a profound impact on their views on such issues as democratic reform and social and economic policy. It is clear that even certain disciplines with a conservative bent studied in Europe (for example, business administration at the Ecole des Hautes Etudes Commerciales in France or economics at the London School of Economics) are experiences different from getting an MBA at Stanford, Wharton, or the University of Chicago. The schools may be similar and the curricula identical, but the societal milieu are not. The broader ideological range of the European political spectrum (at least through the early 1980s), the weight and role of history, and the stronger presence of different schools of thought (not only within the university, but in the media and government) have made for a distinct context. With the exception of small contingents of Nisei in São Paulo and, to a lesser extent, in Peru, Japan has not played a major role in foreign education in Latin America. But the differences between Europe and the United States have been important throughout the history of foreign education, and were even more so during certain periods such as the 1960s and 1970s, when Western Europe was a hotbed of political, philosophical, and cultural change—whereas discontinuity and effervescence of the same sort in the United States was confined to regional and social ghettos.

The differences between countries in Latin America with regard to foreign study location and types of foreign education obviously reflect differences between existing traditions and geographical circumstances; they also reflect the general attitudes of the countries' elites. Thus, on the one hand, it is not surprising (in regard to geographical proximity) to find that over 90 percent of the student nationals of El Salvador, Guatemala, Honduras, and Panama who studied abroad did so in the United States.[2] One the other hand, there is a more indirect causal link (although it would be overstating matters to assert that herein lies the reason for the traditionally passive role Central American elites have played in the democratization of their countries): When one recalls that the United States has been a major factor in the conservation of the economic, social, and political status quos in the isthmian region for nearly a century, that in most Central American countries foreign education tends

to be business or technical study (for example, in agriculture or engineering), and that *most* foreign education in these nations (unreported, of course, in Unesco statistics) consists of military training in the United States, a significant correlation emerges. In Central America, by and large, foreign education does not seem to have had a major impact on the strengthening of civil society, which, with the exception of some sporadic, spectacular, but ephemeral mass movements[3] has generally been extraordinarily weak.

Conversely, if one wanted to take the correlation between foreign study in the United States and a weak civil sector further, the case could be made that those nations with the lowest concentrations of foreign students in the United States and the most diversification of geographical destination are also those where civil society has been the most strengthened in recent years. Two such countries, that often serve as examples of the famous "explosion," are Chile and Brazil. In 1987 well under half of Brazil's and only a third of Chile's students abroad were studying in the United States, when for the entire continent the proportion was nearly 60 percent.[4] Again, it would be foolish to make too much of this correlation, especially since it can be pointed out that Chile had the most authoritarian regime of virtually all Latin America for more than 15 years, and that sending its students to locations other than the United States didn't seem to strengthen its civil society much during that period.

Nonetheless, there is something to be seen here. The fact of the matter is that virtually all of the business and many of the economics students sent from Latin America to study abroad in recent times have pursued their educations in the United States; whereas a much higher proportion of students in the humanities, social sciences, and even liberal professions have continued to travel elsewhere, mainly to Europe. Thus, between 1976 and 1987, the percentage of Latin American students enrolled in U.S. institutions of higher education in engineering fell from 20 percent of the total to 18 percent; the percentage of those in the physical and life sciences dropped from 12 percent to 6 percent. But the number of those enrolled in business schools rose from 16 percent of the total to 20 percent, the single largest category.[5] This ran parallel to a worldwide trend, but amplified it to a significant degree. It is worth noting here, if only in passing, that over the years a substantial number of Central Americans have studied in Mexico in institutions ranging from the National Cardiology Institute and Facultad de Medicina to the War College.

We shall see later to what extent the new "market-oriented," business–public administration–economics overseas education has had an impact on the strengthening of civil society in Latin America. But what seems unquestionable is that education in the traditional liberal arts, social sciences, and even law and medicine received abroad by scores of Latin Americans for years, which endures today though on a much lesser scale, has played a major role in the construction and reinforcement of civil society in the region. It is virtually impossible for any Latin American national to spend several years on an American or European campus and be exposed to the debates and confrontations of contending philosophical, literary, artistic, or social scientific schools of thought, without assimilating their underlying values. Similarly, it is inconceivable for any Latin American student to participate in or follow those debates without grasping the political and ideological context in which they take place in each country where they occur. In the same way that business and economics students today adopt the market-mentality that envelops them during their days at foreign universities, becoming almost second nature to them, Latin American students of the humanities have for many years brought home the democratic, pluralistic, and freewheeling values they shared abroad. Inevitably the area of study predetermines the profession adopted back home, and this choice determines the emphasis that will retroactively be placed on the values acquired abroad. The problem lies, if anything, in achieving the best of both worlds: having the business and administration side adopt the democratic values and having the students of humanities assimilate the market mechanisms.

Business students and philosophy majors, economists and engineers, accountants and poets all are subject to the same influences during their education abroad, but process it quite differently. They may all state that their most rewarding moments were open discussions in the classroom, but their professional activities will cloud their memory over time. In a sense, the nature

of the field of study will unavoidably fashion the memories, the rewards remembered, and the attitudes adopted during the formative years abroad.

An additional point having to do with the different impacts stemming from varying geographical destinations involves what one could call involuntary foreign education, that is to say, overseas education resulting from forced exile. It is a well-known and deservedly emphasized fact that, from the late 1960s in some nations (chiefly Brazil) through the mid-1970s (in Chile, Argentina, and Uruguay), many South American countries witnessed the mass exile of significant segments of their university professors, writers, social scientists, union organizers, and left-wing political activists as a result of military coups and/or intensified repression that took place in the Southern Cone and Brazil. Throughout the 1970s tens of thousands of Chileans, Argentines, and Uruguayans, and also a significant number of Brazilians, settled in Mexico and Venezuela; others went to France, Spain, Portugal, Sweden, and Britain. Very few chose (or could choose) the United States—either because of ideological/political outlook or for reasons having to do with immigration.

While forced exile may not be an exact equivalent of what is generally understood as overseas education, many of the South American exiles were young people or in their thirties and forties, and they underwent a profound educational experience during their years abroad. In many cases they completed a formal graduate education—certainly the case for thousands of exiles in France—in fields they had entered at home or in new fields either chosen freely or imposed on them by circumstances. Other exiles—tens of thousands—experienced a different kind of overseas education by learning a foreign language, acquiring a new profession, being exposed to new modes of thought and debate, establishing contacts and networks, and generally gaining a new perspective on life.

As with the overseas education of Latin American military elites, international statistics neither fully reflect these trends in forced overseas education nor do they adequately quantify them. But it is safe to say that the most significant transformation undergone by the Latin American middle class during the 1970s resulted from exile. Those years made an extraordinarily powerful contribution to the strengthening of the civil society that emerged, one of the most important consequences of the long night of terror many of these societies endured. By counterexample, it can be noted that one of the Latin American countries most lacking in terms of a strong civil society and general democratization—one of the few where clean elections are not yet held—is paradoxically one that was mercifully spared the trauma of mass repression and ensuing exile: Mexico.

The Case of Mexico

The case of Mexico, while not entirely typical, is an interesting example of the interaction between overseas education and the reinforcement—or the erosion or stagnation—of civil society. On the one hand, it is quite evident that foreign education is playing a growing role in Mexico, increasing in terms of numbers of students going abroad and also in terms of influence at home. Institute of International Education statistics (IIE)[6] show that the number of Mexican students enrolled in U. S. universities rose by nearly 50 percent from the mid-1970s to the late 1980s, and this probably underestimates the actual increase, since many border dwellers either hold immigration papers or simply (but not quite legally) maintain both nationalities. But increase is impressive even at face value, expecially if one takes into account the fact that during the same time period expenditures on education in Mexico dropped dramatically, as did scholarships granted by the government for study abroad.

The cost in pesos of studying abroad also rose dramatically over this period as a result of the constant macrodevaluations of the Mexican currency. In its peak year, 1981, the Mexican National Council on Science and Technology gave approximately 2,000 scholarships for study abroad (in the sciences); by 1986 it awarded fewer than 400. Secondly, the available statistics (again not terribly trustworthy but still indicative of broad trends) show that a growing percentage of Mexican students enrolled abroad are attending business or management schools. Again, IIE data show that in 1979-80 only 10 percent of all Mexican students in the United States attended business or management schools, but by 1987-88 the figure had gone up to 17 percent, having attained a peak of 21.5 percent in 1983-84. It seems likely that since 1987 this ratio has again rose.

The most important change, though, has not been a quantitative one but rather a qualitative one. For the first time in many years, perhaps since the turn of the century, a significant portion of Mexico's Cabinet (including, for example, the last two presidents) has had some type of education abroad. And since the 1940s, under a program established by the government, an important number of central bank and finance ministry officials have gone to the United States to attend graduate school or training courses under programs established by the government. But three traits distinguish this trend from the one we have witnessed in recent years.

First, the majority of the students sent abroad by the government in those years were graduates of the National University and the public school system, in any case at the preparatory and higher education level. They possessed certain attitudes and approaches to governance and the country's relations with the rest of the world—attitudes imparted by the National University, which every President of Mexico with higher education has graduated from until now, and which produced the overwhelming majority of the country's governing and intellectual elite for decades. Today, a significant number of the high officials who studied abroad, either under government-sponsored programs or on their own, come from private universities, chiefly the Instituto Technologico Autonomo de Mexico (ITAM) and the Monterrey Technological Institute. And while at upper levels this trend is still not an overwhelming one, at the junior level it undoubtedly is: The large share of officials under 25 years of age presently studying abroad come from private Mexican universities.

Second, officials with a partial foreign education are no longer restricted to the economic and financial areas of government. Whereas before it would be commonplace for high- and mid-level officials in technical areas of government to have spent time abroad, it was more rare to find MBAs and foreign-trained economists or public affairs specialists in other areas of government. This is no longer the case, when officials ranging from the mayor of Mexico City to the head of the ruling party—including congressional committee chairmen, mayors of other large cities, and officials responsible for foreign policy and agriculture—are graduates of Stanford, Princeton, MIT, and Wharton.

Third, the concentration of those officials having studied in the United States, as opposed to Europe, is striking. Again, years ago, most of the technical teams studied in the United States, but their strong presence in official circles was compensated for by two factors: the presence of European-trained individuals in other areas of governance (even in technical areas) and the important national presence of European-educated intellectuals in academia, letters, political debate, and throughout civil society. By 1987, 76 percent of Mexican students registered by Unesco statistics were in the United States and, again, this data probably underestimates their true proportion, since Mexican students in the United States are much more likely to go unreported than their fellow countrymen studying elsewhere.

As recently as the early 1980s, the debates in the Mexican economic cabinet took place between advocates and former students of the Cambridge–Joan Robinson economic policy school and the U.S.-oriented, free-market, anti-statist school of conservative policy. Regardless of who was right or wrong and what the specific merits of each contending current were, the pluralism and diversity reflected by this state of affairs now belongs to the past. The time when at least part of the Mexican financial and economic official establishment had been trained in Europe and subscribed to more progressive European schools of economic doctrine is long gone.

While a tilt toward the United States is certainly less evident with intellectuals in academia, the arts, and journalism, a conservative trend is also perceptible in this realm. Very few of the most important Mexican politicians, diplomats, social scientists, or major writers over the age of 65 today studied in the United States. The opposite is true of those under 50 and even more so of the younger generation. Because it became too expensive, the country ran out of money, and it became largely unfashionable, the last group of Mexican university graduates to go off to Europe to obtain their PhDs, masters degrees, or simply to spend time was in the early to mid–1970s; then the flow dried up.

Similarly it is increasingly rare, in Mexico and throughout Latin America for that matter, to see young, foreign educated, recently returned graduates from American universities finding jobs or activity in civil society, such as in the media, human rights, environmental protection, publishing, union organizing,

women's groups, defense of indigenous populations, grass-roots church groups, etc. This is not a strict left-right equation either, since in many countries the strengthening of civil society cuts across traditional ideological lines. Nor is it a previously existing trend: Typically, as we have already seen, foreign-educated or exiled intellectuals had participated actively in these endeavors, often contributing to the fortification of civil society with the skills, doctrines, or beliefs they had acquired abroad.

Elsewhere in Latin America

This situation is not dissimilar to that which has prevailed elsewhere in Latin America, although many more Mexicans than Brazilians, Chileans, or Argentines with overseas education have received it in the United States. But trends in those countries are also moving in the same direction, as the share of students with overseas education studying in the United States continues to rise. In any case, the singular impact U.S. study has had on Mexican civil society seems to lie in the absence of a compensating trend constituted by exile. Although the number of Chilean students sent abroad by the government, for example, has undoubtedly been concentrated since 1973 in the United States in the areas of economics and business and has originated in private schools like the Universidad Católica, this was balanced out by the thousands of Chileans who spent 10 or 15 years of their lives in France, Spain, Sweden, and Venezuela—first studying and learning entirely different subject matters and then taking all they learned back with them when they returned from exile in the mid- and late 1980s.

But as the period of exile fortunately comes to a close, one of the paradoxical effects this might have is to generate a situation in the rest of Latin America analogous to the one in Mexico or to reveal that similar processes have been underway for some time. The sharp cuts in spending on public higher education, so dramatic in Mexico, have also been occurring in the rest of Latin America, even though their effects may vary from country to country, particularly where public higher education has played a less important role, for example, in Brazil. Thus salaries in Mexican higher education have dropped drastically, going from 7.6 times the minimum wage in 1979 to 3.2 times in 1989.

Lorenzo Meyer, one of Mexico's most distinguished social scientists and former academic coordinator of El Colegio de México, has written that there seems to be a tacit policy of dismantling Mexican public higher education by reducing spending and teacher salaries and forsaking an attempt at reform. At the same time, the authorities appear to be promoting the idea of training the cadres required by the Mexican government, business community, and technical sector either in private Mexican institutions or abroad, or through a combination of both. It is far easier, Meyer points out, to send a few thousand Mexican students per year to the finest universities in the United States than to maintain a fair to middling public higher education system for millions in Mexico. The problem, of course, is that this reproduces the typical, colonial Oxbridge-Ecole Nationale d'Administration syndrome that the former British and French overseas possessions developed in the last century and throughout the first half of this century. Local elites send their offspring to the best universities in the metropolis and receive the finest education in the world. Everyone else in the colony obtains at best a technical, vocational education in high school, with local public universities being transformed into parking lots where students wait more or less patiently and passively until the job market is ready for them. The economics of this scheme are unbeatable in the short run, but many countries abandoned it long ago for other, powerful reasons.

As the last remaining exiled Chileans, Argentines, and Uruguayans return to their countries, and as the effect of the earlier Brazilian exile wears off, it is not unlikely that these countries will suffer from trends similar to those that have overtaken Mexico. Above all, they will suffer from the basic contradiction that thousands of highly trained technicians, MBAs, and economists confront in Mexico and elsewhere. During their years abroad, they undoubtedly picked up, together with finely honed skills in their own fields, a familiarity and respect for American democratic values, for the defense of human rights, due process, clean elections, a free press, and an overall development of civil society that is at least as characteristic of American society as the workings of the free market. These MBAs, economists, and technicians undoubtedly did not consider such aspects of U.S. life as important as the business-oriented, free-market side. Nonetheless, they came to view it as a desirable, often necessary corollary to the development of free markets as they function in the United States. But on returning home, they would

often realize two things that were far from obvious while abroad. First, there is much less of a binding link between the two processes in Latin American than in the United States. Second, in the real Latin American world, the adequate, vibrant functioning of civil society—labor unions, political parties, media, church, environmental and women's groups, human rights associations, etc.—tends to be an obstacle, if not an open adversary, of the type of economic policies business-minded officials and businessmen hold dear. Worse still, even democratic rule itself can be seen as an impediment, perhaps not to the free-market policies themselves, but to their full-fledged, unencumbered, expeditious, and effective implementation.

Democratization and Overseas Education: No Necessary Connection

This is the crux of the matter; herein lies the central contradiction between overseas education and the strengthening of democracy and civil society in Latin America. The two governments where foreign education of technocrats—economists, MBAs and public administrators—has been most obvious, underlined, and praised are the Mexican Cabinet from 1987 onward and the Chilean regimes (known as the "Chicago Boys") under Augusto Pinochet from the late 1970s though the mid-1980s. In both cases well-trained technicians, homogeneous economic policy teams, and old-boy networks worked marvelously within government, between government and business, and between the country and the international financial community. Macro-economic stability—in the case of Mexico—and sustained aggregate growth—in the case ofChile—were indisputably identified with the presence of these teams in office and thus with their foreign educations.

But absence of democracy and strangulation of civil society were also clearly associated with these two regimes. It would be spurious to establish a direct correlation between economic teams and lack of political openness and even more far-fetched to establish a causal relationship between the overseas education of economic teams and democratic regression or snail-like pace of democratization. But a clear link can be asserted in the opposite sense: The presence of well-trained, foreign-educated, cosmopolitan technocrats in office and in business seems to have had no perceptible effect on the political situation in either country. The Chicago boys in Chile never expressed any major revulsion over the massive violations of human rights committed by the Pinochet dictatorship; nor did they find unacceptable any bonds between the economic policies they were recommending or applying and the repressive political context, which included a civil society characterized by banned unions, a censured press, clandestine political parties, etc.

In Mexico, Presidents de la Madrid's and Salinas de Gortari's foreign-educated cabinet members certainly bear no responsibility for the recurrent, widespread electoral fraud and human rights violations, but neither do they constitute an effective deterrent to it or the ongoing government-induced weakness of Mexican civil society. The Ministers of Finance, Trade, Budget, and Programming; the Governor of the Central Bank; and the other leaders trained in foreign business schools or economics departments have not played an important role—or even a secondary one—in opening up the Mexican media, in encouraging the church to be a more diverse, less hierarchical institution, or in permitting the democratization of Mexican unions. Much less have they been known to object to stolen elections and one-sided campaigns. Again, while it certainly cannot be stated that the lack of progress in Mexico on these fronts is in any way the fault of these officials, and even less of their foreign education, they still have not made a significant positive contribution.

The foreign-trained members of the business elite in both Mexico and Chile have also shown a tacit acceptance of their countries present or past undemocratic tendencies. Again, Mexico and Chile are the two nations most often noted for their distinguished, influential (albeit small) groups of well-trained, foreign-educated managers. And again, it would be unfair and inaccurate to attribute to these managers the political backwardness of both countries during the periods in question. But it would be equally wrong to presume any concerted effort by the private sector in either country, particularly among the foreign-educated elite, to encourage democratic reforms in Chile before 1988 and in Mexico today (this was, though, perhaps less true among small and mid-size businessmen in the north of Mexico for a brief period during the mid-1980s). As for civil society, it unfortunately must be stated that an open, critical, and vibrant

media; strong and democratic labor unions; modern political parties; new citizens groups; women's groups; and grass-roots church communities are certainly not being encouraged, promoted, or supported by the overseas-educated members of the Mexican or Chilean business elites.

The underlying problem stems from the type of overseas education in many cases received by (and hence the policy orientation of) the elites in question, who may dissaprove of the trade-offs required by truly democratic rule. Not infrequently one can hear government officials in Mexico, as in Chile in the past, state privately that if the opposition were to come to power, economic policy would be in shambles and a democratic opening in either country would almost certainly have the effect of allowing some type of opposition coalition to reach office. Nor has it been rare to hear many supporters of current economic policy in Mexico or the policies applied during most of the Pinochet era in Chile argue that it could be quite difficult, if not impossible, to implement the "right" economic policies under more democratic conditions of political competition. The fact that these statements may well be plausible or partially accurate does not alter, but rather reinforces, the basic equation postulated here: At least in the minds of many of these foreign-educated officials, businessmen, and technicians, democratic rule is at best policy-neutral and could conceivably constitute an obstacle to the effective implementation of desired economic policies.

Indeed, the argument that an open society might reject the economic teams' desired policies may be accurate to the extent that most of the "right" economic policies, that is, the policies that the teams presently in power have come to consider adequate today, have costly short-term social drawbacks and, in the best of cases, only long-term benefits. In the short-term, privatization, a free market without a stable currency and external funding to sustain it, subsidy cutting, and structural adjustment in general constitute a painful process. This process initially throws more people out of work than it employs through new jobs; it tends to accentuate an already terribly skewed distribution of income; and it reduces both real wages and real incomes through significant cuts in government spending on education, health, housing, etc. In the long run, if everything breaks the right way, these policies may bring prosperity to a majority of the continent's inhabitants; in the short-term they tend to be unpopular policies. If they are put to the test of elections, they often bring about the defeat of those who are identified with them unless exogenous factors intervene. Consequently, a vested interest develops among the strongest advocates of these policies—particularly among economists, MBAs, and businessmen who prefer to work in laboratory-type conditions and to relegate the issues of fair elections, democratic unions, a free press, and civil society in general to a second plane.

In many cases, as Brazilian sociologist Francisco Weffort has pointed out, foreign-educated elites will identify the market with political democracy and the strengthening of civil society as automatically, directly linked processes. In the United States and in Western Europe, markets, elections, and civil society go together, although the causal relationship among these factors is perhaps less obvious and direct that many conservatives have traditionally argued. But where the market has existed for years (perhaps with some restrictions though certainly not like in Eastern Europe, China, and the Soviet Union), but representative democracy and a strong civil society have not, it is far less clear that free markets will automatically bring greater representative democracy and a stronger civil society. Yet that is what the most sincere and democratic foreign-educated technicians generally believe. In other cases, they do not even subscribe to these beliefs and have tended to consider, as in the past, that the Latin American masses are not ready for democratic rule and the eruption of civil society on the political scene.

The Influence of Overseas Education: Some Conclusions

In conclusion, it is clear that for well over a century intellectuals have played a central role in bringing to bear foreign influence on Latin America, and they have frequently done so through overseas education, understood in the broadest possible way. Latin American elites have also been markedly influenced by foreign education through the teams of officials, technicians, and businessmen educated abroad over the years, who have brought home ideas, trends, fads, and doctrines. In the past, the influence wrought by education abroad was generally pluralistic; education was in

the humanities and in the sciences, in business and in the social sciences, in economics and in letters. Moreover, within each field there was diversity, as elites went to the United States and to Europe—to England, France, or Spain. Finally, foreign study affected not only elites educated in Latin American private schools, but also those from public universities who went abroad to study, financed by government training programs or other scholarship or grant programs.

Things have changed. Precisely at the time when Latin American civil society was exploding and when the continent was undergoing its most important democratization process in years, the above-mentioned trends affecting Latin American higher education abroad were inverted. And while some of the effects of the new trends were compensated for by the return of thousands of foreign-educated and foregin-trained individuals exiled from the Southern Cone dictatorships during the 1970s, this process did not occur everywhere, and where it did take place, the effect is wearing off. Overseas education in Latin America is increasingly restricted to private school graduates and is more and more concentrated in the United States, even in those nations where this was not the case previously; it is also taking place more in the business, economics, and technical fields. Civil servants trained abroad in these disciplines are occupying a growing number of posts throughout government, and the spillover from the economic and technical side to civil society is less and less significant.

The potential for overseas education to strengthen and broaden civil society in Latin America is greater today than ever, because civil society is already stronger, more vibrant, and influential than before. Latin America is more receptive to and more capable of truly assimilating world-wide trends than in other eras. But two major obstacles remain: The first is the tendency to use foreign education as a substitute for education at home, as emphasis and spending on education diminish. The second has to do with the type of overseas education involved: Education abroad can contribute mightily to developing the kind of civil society, democratic institutions, and more just and effective economic policies that Latin America needs so desperately; it can also simply be another vehicle for reproducing trends from the past, that is, the indiscriminate, ill-advised, and ineffective importation of ideas from the rest of the world without any regard to their relevance or applicability in the hemisphere.

In recommending policy, one might look to Eastern Europe for an example, where lending institutions set up to rebuild the area and support its transition to democratic politics and a market economy are increasingly utilizing forms of political conditionality to reinforce the region's commitment to democratization. In a similar vein, funding of overseas education would be well served by the establishment of certain conditions requiring a certain proportion of students to enroll in the humanities and those in other disciplines—economics, engineering, the sciences, etc.—to take courses in the humanities, political science, and other "civil-society strengthening" areas. These two conditions would help to strike the right balance between the need of developing countries to train scientists, mangers, engineers, and technicians and the need to strengthen their democratic institutions, ensuring that those who go abroad return more convinced than before of the desirability and necessity of democratic rule, a strong civil society, and respect for human rights.

Notes

1. *Newsweek International*, "10,000 Men of Harvard," December 10, 1990.
2. Unesco, *Statistical Yearbook*, Table 3.16: Foreign Students by Country of Origin, pp.3-423.
3. Examples are Nicaragua from 1977 to 1979, El Salvador from 1977 to 1980, and Guatemala from 1980 to 1981.
4. Unesco, *Statistical Yearbook*, Table 3.16: Foreign Students by Country of Origin, pp. 3-423.
5. *Statistical Abstract of the United States* (1989), p. 152.
6. Institute of International Education study abroad statistics.

Chapter 9

University International Linkages: The Elusive Ideal

Ralph H. Smuckler

More than ever before, U.S. universities are devoting attention to internationalizing their programs. Since the Committee on the University and World Affairs chaired by J. L. Morrill issued its report in 1960, much has transpired to reinforce the committee's farsighted recommendations intended to lead toward a broad strengthening and deepening of the American university's international dimension. While the 1950s brought a "rapid expansion of foreign and international programs in some universities . . . tasks that all universities and colleges face in the 1960s are even more formidable and demanding."[1] This observation by the Morrill committee might well have been repeated with validity at the opening of each decade since 1960; it clearly applies 30 years later as we move into this final decade of the twentieth century.

The earthshaking, often precipitous changes in recent years, described by Francis X. Sutton in Chapter 1, have added a new sense of urgency to the search for a broadly international and comparative perspective within university programs and among our citizenry. During 1990, we received the action plan of a coalition of 165 major national organizations, the first such massive movement devoted to enhancing foreign language and international studies in schools and universities. The reports of this coalition for advancement of foreign language and international studies set forth recommendations representing broad consensus on urgent next steps, nationally and institutionally.[2] We have seen a national study and conference on internationalizing universities,[3] and we perceive rising attention to international exchange and cooperation issues in the programs of our major higher-education associations. These efforts of the past few years were preceded by similar events and reports in each year since the Morrill committee report was issued. But even now, most observers of the American higher educational scene would agree that our universities and colleges, with but a few exceptions, have far to go to reach the international dimension that Morrill and his colleagues—and many other scholars and writers since then—have considered so critical and would have us attain for our national well-being.

As higher education has lurched ahead in the continuing quest for a broadly pervasive international dimension, we have seen a wide range of initiatives and individual university responses to needs and opportunities. Some of these have been led by administrators; most reflect the actions of individual faculty members or departments. Undergraduate study programs abroad of varying forms and durations are significant components of international studies at many universities. At some, contract projects in developing countries are important. Many of these technical assistance efforts have been based in public and land-grant universities, but major private institutions have also been very active.

The range of initiatives include special courses and curricular innovations, and the addition of an interna-

tional or comparative concern to existing social science, liberal arts, or even professional course sequences. Programs that add a cross-cultural experience to student life on campus are now in the ascendancy, expanding sensitivity to both international and national diversity issues. One finds various types of area and international studies centers. Add to these the expanded attention to foreign student and scholar populations, carefully structured exchanges of students and faculty, and special lectures, seminars, and scholarly events on campus, and we begin to see the wide range of possibilities now being pursued either aggressively or, still in many instances, merely passively by university faculties and leaders.

University linkages are an important component of this mix and figure prominently in the plans developed at some universities to attain a strong international dimension. Linkages take on many shapes and sizes. The terminology itself, though not well defined, figures frequently in discussions and reports on the status or strength of a university's international effort. As an example, the meeting convened by the American Council of Education (ACE) in Helsinki, Finland, on August 11, 1990, which brought together rectors of Eastern European and Soviet universities with their American counterparts, focussed heavily on prospects for interuniversity cooperation and formation of linkages. The ACE meeting immediately followed the conference of the International Association of Universities, at which the subject of linkages and interuniversity ties figured prominently. In view of all this attention, what can be said about university linkages—their meaning, value, and their record of successes and failures in recent decades?

Sources of University Linkages

The term "linkages" has taken on numerous meanings, but it generally refers to a form of serious relationship between an American and a foreign institution. Ideally, such a relationship will have certain characteristics. It will provide benefits in both directions and it will be long term in nature, perhaps with no fixed terminal date. It will usually be based on a written agreement that provides for broad institutional participation and multiple program goals, including exchanges of students and, perhaps, faculty and materials. It may encompass agreements to seek financial resources to support collaborative faculty research or arrangements for doctoral studies and dissertation research. Linkages may tie the American university to an institution in an advanced country of Western Europe but, most frequently, the term is likely to designate a U.S. university relationship in a non-Western area. This is probably because academic traffic with Europe is more relaxed and requires less formality and stimulation by departments or university administrations.

Such an ideal linkage plan—about which I will comment more later—may grow out of a number of circumstances. It may evolve from a technical-assistance relationship between a U.S. university and one in the developing world, initially supported by an external sponsor such as The Ford Foundation or the United States Agency for International Development (USAID). The technical-assistance project goal will be to build or greatly strengthen the foreign educational or research institution and will initially provide a number of U.S. advisors or technical specialists, some of whom will be resident at the foreign institution for several years, while others will be present for shorter time periods. This professional interaction, coupled with visits of administrators and advanced-degree trainees at the U.S. institution, will generate some close ties over the 5- to 10-year life of the project. And, it can lead to a continuing pattern of exchanges and professional interaction at a lower level of intensity when project funding ends. Sometimes it leads to what should be considered institutional linkage within the broad lines suggested above.

A U.S. university plan or strategy to form linkages with foreign institutions will move a larger number of technical-assistance partnerships toward successful long-term ties than if such purposes are absent at the outset. The combination of a contract to build or strengthen an institution abroad with an explicit linkage goal from the start of the project is most likely to yield a long-term, mutually beneficial relationship.

Institutional linkages can also be derived through university planning and administrators' initiatives. Many linkage agreements now in place—if not in actual operation—between Chinese and U.S. institutions grew out of U.S. international program leaders and university presidents visiting China in the 1970s and early 1980s, soon after changes in China made universities

there more accessible and ready to cooperate with western institutions. While there, it became customary to sign institutional agreements to cooperate in one way or another. (At one major university, there are 18 agreements with Chinese universities, many formed after visits by university trustees.) A similar flurry of linkage building has more recently occurred in Eastern Europe. A few of these may grow into what we could define as "operating" linkages. Most, as in the case of China, will probably be paper agreements with little vitality after the initial interest.

A third source of university linkages is the interaction of individual or small groups of faculty with counterparts in an institution abroad. Though these usually are narrowly based within the institutions and are short-lived, they can take on broader purpose and grow in importance, particularly if the institutions are ready for such growth and the initial faculty ties are energetically pursued and productive. Although they usually involve only a few scholars or a single department, they may evolve into professional school or college linkages, and less frequently into general institutional linkage.

Foreign alumni interest provides a fourth base for starting institutional linkage. Sometimes a relationship derived through interest and action of an alumnus abroad takes the form of a joint research program with the graduate's dissertation advisor, or an exchange growing out of a graduate student's experience while in the United States. Sometimes, particularly if the graduate has moved into a university leadership role in his or her home country, the foreign alumnus' initiative can take on broader institutional program planning and general usefulness, assuming the U.S. university is alert and ready.

Linkages can be categorized according to one or more or a blend of these four main originating sources: technical assistance projects, university plans, individual scholars, or alumni contact. And they can also be differentiated by the level of generality they represent within universities. They can be all-encompassing within the institution or have a very narrow base.

Variations Among University Linkages

At the broadest level, linkages are university-wide in sponsorship. With program and support roots in a number of departments and schools, such linkages, managed and planned centrally, can be seen as quite different than those conceived and managed in one college or professional school.

Are those relationships that are created, budgeted, and programmed at the college or department levels also to be considered university linkages? Since they serve the needs of a distinct segment of the university and represent a commitment of one or more units—considerably less than the total university—they do reflect a different level of program opportunity than the more generalized relationship, although they may be well sustained and highly useful to the unit or people involved.

Then there is a third level, the individually created and sustained tie between an American professor and a colleague in a foreign institution, perhaps with a former graduate student, mentor, or research partner. These would be by far the largest number of links and, though narrowly defined, most intense and useful to the individuals. There is no relationship more carefully designed or productive, albeit in an institutionally narrow sense, than individual professional or scholarly ties across international boundaries. But are these in fact university linkages, if they rest on the tenure and energy of one professor in the university and do not take on broader meaning? Linkage means prolonged or sustained ties. But what happens to the individualized linkage when the professor moves on, changes his or her research interest, or retires?

In addition to origin, level, or breadth of the university base, there are other ways of classifying university-international linkages related to process, content, and function.

Most university linkages have the stated purpose of increasing the flow of people, either students or faculty, between the two institutions. Frequently, these exchanges involve U.S. students going to study abroad, but sometimes it is the reverse. Particularly at the graduate study level, students coming to the United States may also be part of the understanding. A plan for joint or collaborative research may also be integrated into the relationship, which is frequently the case if faculty members have originated the linkage or are part of the exchange. Many also provide a regular exchange of publications and related materials.

This combination of programs or functions (i.e., exchanges, planned research cooperation, and flow of materials) is most common; but any one of these program activities may be sufficient by itself to justify negotiating an understanding and signing a linkage agreement. There are other reasons to sign, usually related to a need to legitimize the search for financing. In a number of situations, a signed agreement can be used to underpin requests for foreign or U.S. government grants or other support. So linkage agreements frequently perform a legitimizing function.

Linkages can vary in duration from short periods, perhaps three years to several decades. The documents themselves may call for review and evaluation after a few years, and renewal if justified by experience. Frequently, the question of continuity is left open-ended. Linkages also vary in number of participants, from a minimum of two institutions, one U.S. and the other foreign, to an arrangement through which a state system of U.S. universities or a consortium engages in a long-term exchange or collaborative-research agreement with an institution or group abroad.

The central point is that institutional international linkages take many forms. And while we can classify them according to how they began, their program breadth within the university, and their function and content, such diversity makes it no simple task to evaluate them or judge their importance or their contribution. In viewing linkages as a means of internationalizing the university, one must also take into account the fact that international program goals will vary greatly from one type of university or college or department to another.

The Ideal Model

Is every relationship between a U.S. and a foreign university to be considered a linkage? Does an arrangement providing use of dormitory or guesthouse space during the summer, enabling a group of U.S. university students to study at a Chinese institution, mean that a linkage exists? Does a French graduate student's presence in a U.S. professor's laboratory in the year following the American professor's Fulbright appointment at the student's university in France constitute a university linkage? Does it qualify as linkage if the student is followed in turn over a number of years by others from the same university in France? Does it matter if there is no formal agreement? Is a technical-assistance, institution-building project, by definition, to be considered a linkage between the two or more institutions involved? If so, how long after the externally supported contract ends does linkage exist (i.e., how long after the formal project activity has ceased)? Are all relationships to be called linkages? Unfortunately, they frequently are, and this has caused some difficulty in either counting the extensiveness or measuring the value of university linkages.

We are not concerned here with all international relationships among universities, but are primarily examining experiences with a more restricted set, those that have certain ideal qualities that will add to their value as universities build their international dimensions. First, they are of long-term duration, extending a decade or more. This means they can become a factor in planning university programs and individual careers. Faculty can discuss and plan joint research, schedule sabbatical leaves, develop language skills, and promote student exchanges around the existence of an active linkage with a foreign institution. Such a relationship may provide a basis for long-term research collaboration. A long-term linkage may emerge from any type of beginning. It will rest on the availability of funding; but of even greater importance, it will rest on the genuine value of the relationship to the partner institutions and the sustained interest of faculty members. The longer the active relationship, the closer to the ideal.

A second quality of the ideal university linkage is the existence of a broad base of involvement within both institutions. The broader the base of activity, the more likely the university on each side will benefit. A tie that interests one department at each end is clearly less useful than one engaging the interest of faculty members in several departments in a college, or even three or four schools or colleges within the institution. Furthermore, the ideal linkage will serve more than one function and be an asset, for example, for those active in research as well as those promoting student exchange programs.

This is not to suggest that an intensive relationship over many years between two departments, or even just two scholars, may not serve a very useful purpose. It certainly may. But it is narrow in terms of institutional value and therefore would be less than the ideal.

Multipurpose linkage arrangements are more likely to grow out of broadly defined institutional agreements, as a result of program planning or a technical-assistance project. With a broad base of interest in each institution, the relationship is likely to command internal financial support, survive the departure of individual faculty members or administrators, and even persevere through political or administrative changes.

If both parties do not have confidence that they will realize benefits from long-term, broadly based linkage agreements—though planned for a decade—they will end much sooner. Perceived benefits in both directions are at the heart of the ideal university-international linkage concept. From the U.S. university perspective, gains may take the form of access to opportunities abroad for undergraduate or graduate-level studies or internships, access to new colleagues for joint research or faculty sabbatical planning, or exchange of library or biological materials not available locally. Faculty members who are the users of such ties must view the benefits, when compared to those from other international opportunities, as worth the time and effort. They must view the research or new foreign teaching experience as professionally rewarding, and certainly not costly to their careers. And from the perspective of the foreign institution, similar benefits must be in sight, or there may be other explicit gains that are institutionally and personally identified.

There must be a direct and reciprocal gain, but it need not be symmetrical. For example, in the case of a linkage with an African university, the U.S. institution may perceive the gains as accruing to its African Studies center and those on campus affiliated with the center, while the foreign institution may see its students and young faculty gaining through easier access to advanced-degree training in the biological sciences or other fields. The U.S. university leaders may view the gains as accruing over the long run, after a period of investment, while those in Africa may initially have a shorter time perspective.

Since many U.S. universities—especially those operating in the land-grant tradition—have defined their missions as encompassing significant service roles, including international service, they may well view their gain in an international partnership to be that of fulfilling the service component of their mission. And this alone may be fully satisfying. But that is most likely to be the case when external funds are available, not when the university's own budget is at stake, particularly if it consists of state-appropriated funds going toward what may appear to be foreign aid.

In fact, financial commitments are critically important, since international linkages carry special costs. The ideal is for the linked institutions to bear the costs equally or commensurate with their respective share of the gains. In many U.S. universities, this may mean a special central fund to support the faculty exchanges or other activities in a linkage. And it can mean, at most universities, that departments and colleges will financially participate as one test of the value of the relationship to them. But this financing pattern will vary among U.S. institutions. Abroad, the problem is much more acute, particularly in developing countries. In any case, it is important that the linkage not be completely dependent on external funds. When it is, there is good reason to doubt that genuine mutual benefit exists and that the linkage will survive for very long after external funding ends.

To the extent that an international linkage meets these criteria—durability over time, a broad program base within the university, realization of real benefits in both directions, and funding stability based at least in part on internal funding—the linkage approaches the ideal arrangement. University faculty and international program leaders have searched and struggled over the years to reach this ideal, but few have realized it. Indeed, most linkages fall far short. There are many that have approximated parts of the ideal and these linkages, though not ideal, have been generally useful to the university's search for a stronger international dimension.

The reasons for seeking linkages coming close to the ideal may be apparent from previous comments. The ideal linkage presents benefits to faculty, students, and university program planning in ways not easily matched by other building blocks or components in internationalizing strategies. To the extent that this internationalizing process can be accelerated by planning and strategy-building within the university, either centralized or in parts of the institution, university linkages can play a critical role. If a large university has three or four linkages actively in place, each with an institution in a different world region, it can facilitate professional contacts, access, and opportunities throughout the university to both faculty and students. Such linkages become significant tools to accelerate move-

ment toward a global outlook and a serious international dimension throughout university programs.

How Elusive is the Ideal?

What has been the U.S. university experience in establishing such linkages? Do they now play a significant role on the road to internationalizing higher education?

In discussing the linkage concept and elaborating on its great potential in 1976, I pointed to a study and new organization then taking shape on the national scene to facilitate and encourage the formation of linkages: The Association for International Cooperation in Higher Education and Research (AICHER). Sponsored by the six major higher-education associations in Washington D.C., AICHER was to provide an easy entry point and source of information for foreign institutions seeking ties to U.S. colleges and universities, that is "...a base for providing technical assistance on the formation of institutional cooperative relationships, a point for monitoring the network of relationships, and a facilitating mechanism for promoting institutional ties."[4]

For various reasons, AICHER failed at birth. In hindsight, it would have served a useful purpose; university association leaders are still talking about ways to perform the functions identified by AICHER. But when all is said and done, it is universities themselves, not associations or organizations, that bear the responsibility to move rapidly in new international directions. Their commitment and readiness is the key, and effective linkages with institutions abroad can prove very useful in the process.

As suggested above, there are few linkages in operation that come close to having the ideal qualities that would make them broadly valuable. But there are many, nevertheless, that serve a useful purpose. What are the impediments that have stood in the way of attaining the ideal?

1. One serious impediment: Genuine mutual benefit.

One group of impediments centers around the concept of mutual gain. For this reason, linkages with institutions in Europe are much more likely to approach the ideal than links in southern Asia, Africa or other developing world areas. There is much rhetoric about mutual benefit and much talk about the potential in specific situations. But from the U.S. university professor's perspective, and in most disciplines, it is much easier to think and plan for the short term and to realize immediate gains from associating with colleagues in advanced countries, not those in the developing world, where benefits may have to be seen as long-term. Thus, the mainstream of the university faculty in many fields looks to Europe, and possibly Japan, as the place to build serious ties. It views the developing country institutions as of marginal interest, since research there is, most likely, less advanced.

American professors flock to Europe each summer and during sabbaticals, frequently at their own expense, to associate with scholars and scientists there and to live in the relative comfort of an advanced country. The same has been true for students as data on overseas study programs show, year after year.

It takes special incentives to encourage broader interest by the individual professor that is beyond the laboratories and libraries of advanced countries. Of course, there are always exceptions. For example, in some biological science fields, some scientists must have access worldwide and to tropical areas in particular. And if a professor in the social sciences has centered career attention on Africa or India, field access is essential. Although the number who have moved away from our Euro-centered educational interests is growing, the vast majority remain tied to advanced countries. Thus, if we are to truly internationalize higher education (i.e. beyond Western Europe), we must find special ways to facilitate the movement of scholars to more remote locations in the developing world. Linkages are one such way, but they must be conceived and planned with benefits going in both directions.

Since technical assistance contracts have been major vehicles by which university faculty experience the developing world, they have been a significant means of broadening faculty interest in general, beyond Europe in certain fields. In the 1950s and 1960s, faculty in many academic fields were involved. Some private foundations and the U.S. government, through USAID and its predecessor sponsored university technical-assistance projects that involved professors in agriculture, the social sciences, business management,

economics, education, physical and biological sciences, and even fields within the humanities. But due to the perceived needs in developing countries, this narrowed considerably in the past 15 years, and most attention has focused on fields related to food and agriculture. Thus, institution building and research projects—and hence, the chance for originating new linkages—have been mainly in food-related fields within the universities. The health disciplines have become more engaged only recently. This narrowness of focus in technical-assistance projects has diminished their value in the internationalizing effort at U.S. universities.

Furthermore, most of these projects were essentially designed to aid institutions or development efforts in very poor countries, the most difficult settings for evolving mutually beneficial ties. As one visits countries in Asia, Latin America and Africa, one finds numerous universities that were the centers of U.S. technical assistance attention. Many of these are now major assets in development efforts. But while lip service was paid to long-term relations with U.S. partners, mutual gain and other desirable qualities, the contracts were generally too restrictive and funding too limited to support side benefits contributing to additional purposes. Also, lack of genuine mutual benefit, in spite of rhetoric, restricted direct university investment for linkage building to small amounts. If the motivation is only to provide service (i.e., to build the foreign institution, and there is no plan to use project work as a means of building U.S. institutional capability), one cannot expect strong links nor feedback to U.S. academic programs when the contract ends.

As universities have evolved goals and strategies for broadly internationalizing their academic programs, agriculture faculty with technical-assistance experience have not had much impact outside their own departments and colleges at most institutions. This is unfortunate but understandable in view of the way universities are compartmentalized. Unfortunately, only in recent years has the wealth of experience in the developing world even begun to feed into internationalizing efforts in our colleges of agriculture themselves. Most have considered their work abroad, satisfying as it has been in many instances, as a chance to be of help in a worthy cause with all costs covered from external sources. But with that rather limited perspective dominating, unless strong leadership with a broader view prevailed, one could hardly expect serious linkages to form and persevere after funded contracts came to an end. In most cases, contract ties have resulted after project completion in only a trickle of graduate students and an occasional visit by a professor or administrator. Such activities have been useful, but far from the ideal.

Universities pursuing an international dimension may well be ready to invest in exchange relations or links with institutions abroad (or at least departments within the university may be ready to do so), but they must see the benefit to their students or faculty. And that inclines U.S. university ties toward advanced areas of the world. The vast bulk of exchanges occur with industrialized western countries. What are seen as the benefits to be gained by U.S. universities from linkages with non-Western or underdeveloped countries?

The central benefit is to those who wish to have easy access to colleagues and research or study situations in the foreign country. As mentioned above, these generally are faculty who are attached to area studies centers and the few in the humanities and social science departments who have special academic or, perhaps, ethnic ties with the region. The social science disciplines have generally resisted giving attention to non-Western areas, priority going instead to theory building and quantification with supposedly general applicability, but essentially using cases drawn from U.S. or European experience. The professional fields have followed the same path. This Eurocentrism has been gradually changing as students and university academic leaders, increasingly aware of global issues and the bigger world, have broadened their horizons, as have an increasing number of faculty in the disciplines. Thus the benefit of linkage to Tribhuvan University in Khatmandu, Nepal or Sichuan University in Chengdu, China will accrue in the form of access for faculty in certain departments or centers of the university. But those parts are not the ones that the foreign university may view as providing benefit to it.

The foreign university may view chemistry, computer science and agriculture as priority fields. And USAID may see only agriculture as the important field to support. Thus, the idea of mutual gain must be viewed within a broad perspective, that of a president or provost—dedicated to internationalizing the overall university—who can see the value of financially sustain-

ing and encouraging activities in one field so that scholars in another can benefit, and the university, viewed as a whole, can move ahead. This does not happen very often, and it will not happen at all if there is not an international program lead point in the university to identify and bring diverse interests together.

In recent years, ties have been pursued in order to expand and diversify study abroad situations. This is likely to continue. Illustrating the need for predictable gain in creating international links, the University of California, Los Angeles (UCLA), has negotiated linkages with many foreign universities and educational organizations—26 in the period from 1960–1984. Most of these were in low- and middle-income countries. In these agreements..."the determinative consideration for UCLA has always been: What will enrich and enhance the academic and scientific mission of UCLA scholars and, correlatively, advance as well the universal search for knowledge and truth irrespective of national boundaries?"[3] To pursue knowledge, U.S. scholars must have access to a range of settings, scholars, cultures and research situations, and this has served to justify linkage building abroad for UCLA and some other universities. This increasing interest in stable ties overseas can be seen among those engaged in technology and scientific disciplines as well as the humanities and social sciences.

2. Other impediments: Finances and political shifts.

Perceived lack of mutual benefit is one concern often serving as an impediment.What are the others? Certainly, lack of financial support is another. Lack of internal support funds is often more a reflection of weak commitment to international goals by those who control university resources than it is an absolute shortage. Other priorities have simply prevailed. But, even external resources have been targeted narrowly, only rarely to stimulate or sustain broad-based, long-term linkage. In recent years, we have seen serious interest by U.S. government agencies in such linkages and the situation may well be improving with this new interest.

Linkage relationships are not inexpensive. While in principle a long-term exchange program can be designed to add little or no costs (with the possible exception of travel expenses), the majority are in fact costly. And they are cost-effective only if they are mutually beneficial. If five students are to be exchanged each year in each direction, one could expect each student to leave funds behind for the visiting student to use; this arrangement, at little or no added cost to the institutions or the students, works in some cases. But in practice, some level of subsidy is usually required to balance the cost of living arrangements, tuition differences, scheduling or timing differences, and other such problems. These differences are particularly difficult when arrangements are made with institutions in developing countries or others where currencies may be soft. Some institutions have invested sizeable funds in quid pro quo arrangements that benefit only a few students or faculty.

Another impediment is political change. The uncertainties and upheavals that occur in the developing world have taken their toll and steered the U.S. university away from investing heavily in any one location or linkage abroad. One example of this, probably only rarely duplicated, is the Michigan State University (MSU) experience in Nigeria in the 1960s. All the signals were right for a long-term, ideal linkage with the new University of Nigeria at Nsukka, which MSU, supported by USAID, helped to establish. Basing up to 30 specialists and faculty there at one time and working closely with Nigerian faculty in many fields, MSU helped to plant a widely acclaimed, new type of university in a country just emerging from British colonial rule. The project and the new institution were highly successful; the planned long-term relationship failed.

In this case, the Biafran movement and civil war overtook the relationship. The new university was viewed as the center of the revolutionary movement. MSU was wrongly perceived by the victorious Nigerian government in Lagos as officially favoring the rebellious, eastern-region Biafrans, many of whom were, understandably, personal friends of MSU faculty. For years after the war, MSU faculty were unacceptable in Nigeria; long term linkage plans were of little value. In positive ways, the project strongly influenced MSU, which evolved a very strong African studies center with useful linkages in other parts of the continent, but none with Nigeria.

This example may well be the extreme, but there are many others—for example in Turkey, Uganda, China, Vietnam, and Central America—that are similar and

where macro-political shifts impaired opportunities for long-term ties.

Useful Deviations from the Ideal Linkage Theme

Experience has taught us that linkages that do not fit the ideal model can, in fact, be easier to arrange and provide considerable benefit. Whether or not these should be defined as institutional linkages or simply exchange or research agreements is an open question. Whatever they may be called, they exist in large numbers, frequently tied to the interests of one or more scholars. Narrowly based, they are close to where successful action must be, that is, the faculty or departmental unit. The value of a linkage agreement depends on faculty or student interest—perceived mutual benefit—and that is most likely to prevail when the individuals concerned have been a part of the planning and negotiation of the agreement. Some U.S. universities have file drawers full of signed documents based on understandings with foreign institutions to cooperate over a number of years, but they are little used due to shifting faculty interest, shortage of funds, or some other critical deterrent.

In recent years, the Collaborative Research Support Program (CRSP) has evolved as a new and successful model offering promise for long-term linkage. These grew out of the program based on Title XII of the U.S. foreign assistance program. The collaborators are foreign institutions and U.S. universities, working together on research and related training focused on a specific commodity or food and nutrition issue. USAID is a major funder of the collaborative research, but the universities, both U.S. and foreign, are responsible for matching funds on a negotiated formula.

The CRSPs largely focus on specific commodities such as sorghum and millet, small ruminants, beans and cow peas, peanuts, and other such topics important in the developing world and in the United States. Each involves formal agreement among a group of American institutions linked closely with institutions abroad.

From the beginning, the CRSP concept rested firmly on the idea of mutual gain. Existing U.S. university research on beans and cow peas, as an example (an important source of nutrition both in the United States and parts of the developing world), was seen as benefitting through involvement with developing country institutions, and vice versa. Hence, U.S. institutions have been willing to participate financially, and top scientists to become engaged with colleagues in Africa, Asia and other developing areas. Furthermore, USAID's continued partial financing of the research provided the core for a long-term program. Although initiated to provide a new research focus on shared problems in agriculture, the CRSPs have also incorporated significant training dimensions and institutional strengthening.

There have been other consortial type variations from the ideal linkage model. In the 1970s, the Midwest Universities Consortium for International Activities (MUCIA) worked out an agreement with Moscow State University that provided for exchanges of faculty, each one to be negotiated individually but within a broad set of guidelines and agreed conditions for financing. A grant from the United States Information Agency (USIA) provided partial funding and each institution picked up local costs. The eight university members of MUCIA have sustained the relationship with Moscow State at low volume—two or three exchanges per year on average during some difficult times. But recently, as the opportunity for exchange with Soviet institutions has greatly improved, the MUCIA budget has had to bear a larger share of the cost than before, as USIA funding has sought new programs to support. The linkage itself is being reevaluated. Mutual benefit may yet outweigh the higher cost, but the experience underscores the need for a sustained, even though modest, external funding source to stimulate and legitimize allocation of internal funding.

The University of California has linkages as a system, essentially to provide foreign study opportunities for its students. Based at the Santa Barbara campus, the overseas study program has flourished. It is based on agreements with institutions in Asia, Africa and Latin America. Each is based on reciprocity, with California opening doors for study for scholars sent from its partners abroad, and the partners providing study opportunities and settings for groups of California students. The program, although costly by most standards, approaches an ideal mode of relating internationally.

The relationship between the University of California and the University of Nairobi serves as an example.

From the mid-1970s onward, a regular two-way flow of faculty and students—with modest support from the USIA and a major effort from the two universities—resulted in 46 University of Nairobi junior faculty members with advanced degree training in a wide range of fields in California. This was matched by Nairobi opening doors for up to 15 California students for study each year. It also enhanced research opportunities in Kenya for faculty and graduate students on a system-wide basis. Reciprocity, long-term planning, breadth of program involvement, and investment on both sides have been key ingredients of the linkage. And a sustained USIA investment, although modest, has also been essential.

These three variations from the institution-to-institution linkage model—the CRSP, the consortium, and the system—are but illustrative of numerous creative and useful deviations from the norm. Each of these serves a productive purpose, contributing well to internationalization goals at the universities involved.

Recent New Initiatives

As the values of long-term linkage have become increasingly apparent as a component of university strategy to internationalize, several new government programs have emerged to stimulate and support linkage building. Although there have been a few initiatives by government to support long-term relations among universities that previously worked together in a technical assistance phase, none really took hold. Most suggestions to sustain such ties (for example, in India, in the case of a number of successful agricultural universities that had received assistance from specific U.S. land-grant institutions under USAID contracts) had fallen on deaf ears and budgetary woes. In a few cases, the U.S. Department of Agriculture (USDA) attempted to support post-contract ties. But in general, such long-term arrangements, when they were pursued at all, were sustained on an ad hoc basis and at high cost to the U.S. university. Mainly, they rested on the initiative of individual professors. USAID recently launched a longer-term linkage program, and this new and significant initiative takes the traditional agency policy and program in new and more broadly defined directions.

The USAID University Development Linkage Program, announced in 1990 and taking shape in 1991, was preceded by an institutional affiliations program on a smaller scale, which USIA sponsored. U.S. universities eagerly joined in, and during the first year, numerous linkages were encouraged and partially supported by USIA. The supportable linkages were limited to certain countries; awards were made on a highly competitive and matching-fund basis and the contributions by USIA were distinctly limited. Institutional partners were required, as was to be expected, to bear the major costs. The USIA maximum contribution of $50,000, to be spread over three years, was to be limited essentially to travel costs. But such funds were critically important to a generally hungry university community, and provided the area study center or department that had obtained the grant some added legitimacy in seeking institutional funds to support the visitors, lecturers, and other two-way study programs built into the plan.

The USIA program has found sustained interest in the university community. The list of countries for which grants were permitted has varied over the years. And, when managed well at the universities, it has had a positive impact at both ends of the partnership. But this has not always been the case, and many situations could not be actively sustained beyond the initial three-year USIA grant. The heightened flow of scholars and cooperation during the grant has tended, with some notable exceptions, to drop off quickly when the grant has ended. In the interest of diversity, terms of the program have not permitted renewals, and this has probably been a mistake. Fortunately, the $50,000 grant ceiling has increased, but it is still to be applied only to limited types of expenses over a three-year cooperation plan.

In this experience, mutual benefit can be seen, once again, as the key to sustained institutional ties. Without it, universities or units within them simply cannot justify the continuing allocation of resources to this purpose.

The new USAID program has the goal of enabling institutions in developing countries to meet the needs of their societies. The general purpose is to encourage sustainable collaboration between U.S. institutions of higher education and developing-country colleges and universities—to further the internationalization objectives of the former and strengthen the latter. The project

announcement recognizes that sustainable linkages must produce real benefits and must serve the internationalization needs of U.S. colleges and universities, and the development needs of developing country institutions and the societies they serve.

Starting with 13 awards in 1991, the intention is to expand the program with USAID contributing as much as $100,000 per year for five years to help launch ties that will be sustained by the institutions themselves. Universities are to match the funds and to design their programs. The key to success will certainly rest on well-defined mutual benefits. As in all linkages, they are at the core of sustained interest and financing.

The Usefulness of Linkages: What We Have Learned

In 1976, I described long-term institutional linkages and the ideal model, and considered it to be "...the best prospect to improve the exchange flow between the United States and economically less-developed countries."[6] Linkages would permit better career planning, encourage joint-research endeavors, permit and facilitate a more prudent use of scarce exchange funds, and be attractive to external donors.

At that time, I found "good reason to believe that in the era ahead, the variety of ad hoc exchange relationships that we now have will be joined by a strong network of institutional ties, which will be based on mutual benefit and sufficiently planned and financed to assure the type of flow of knowledge and people that is so essential to the advancement of science and the enhancement of the quality of life."[7]

What in fact can now be said about the usefulness of linkages? Have they proven to be the valuable instrument for university internationalization as seen in the mid-1970s? Have they succeeded to the degree anticipated?

Certainly, we have learned much in our assistance projects and our search for strong academic ties and access to colleagues and situations abroad. As one outcome, stronger higher-education institutions exist now in the developing countries that did not exist before. In the process, we have realized the great difficulty in attaining the ideal linkage—the long-term, broadly rooted and articulated, balanced and mutually beneficial cooperative relationships that have been so elusive. Costs to U.S. universities have proven to be high in such arrangements, whether borne by the universities central budgets, the colleges or departments. There are a few examples of the ideal, but not many.

Because the process is difficult and costs have been high, the benefits of a sustained linkage must be clear to those who form it. And such benefits to American faculty and students have been most apparent in alliances with European institutions outside of the non-Western, developing world. Language problems in the West are less severe, so broad participation is easier. Living conditions are better, and, most importantly, the quality of scientific and applied research and instruction is frequently more inviting in the advanced countries. This is certainly not true in all fields and there are notable exceptions, such as anthropology or geology. But tests of mutual benefit do incline university people to seek ties in the United Kingdom and Europe more often than in the developing world, where cumbersome and costly institutional ties may be a necessity to gain access.

We have also learned that successful linkages have rested heavily on interested individuals and centers or departmental units within the university. This is always the case in the absence of an institutional design for internationalization; and frequently true even when there is such a plan backed by institutional funding. Individuals who are at the core of exchanges, joint research and other linkage activities, simply must view them as worth their professional and personal sustained effort.

We observe variations on the ideal linkage theme and many of these have proven valuable in both directions. Ties that have lasted only three or four years have had a positive impact. Narrowly defined ties have frequently made their contribution to the internationalization process in the United States and have been beneficial abroad.

The USAID contracts, designed as they usually have been to aid development abroad, have served a valuable, but limited, purpose at U.S. universities while contributing abroad. They have succeeded in creating or strengthening higher-educational institutions in many developing countries, and such efforts, coupled with training at U.S. campuses, have been an integral

and essential part of the development process. In India, Indonesia, Taiwan, South Korea, Thailand, Zimbabwe, Turkey, Brazil, Argentina and many other countries, one can point to efforts that have produced high-level manpower and leaders who have been essential to attaining a more modern society. Furthermore, these efforts over the years have awakened interest and generated useful disciplinary and professional contacts on the U.S. campus. But these have been rather narrowly drawn and, in recent years, limited largely to parts of the university tied to agriculture.

We have also learned the value of small, external-support grants for creating significant linkages, perhaps not the ideal, but useful nevertheless. USIA has paved the way, but the new USAID linkage project will, if well managed, point in the right direction.

Universities have taken important steps toward internationalization, and linkages with higher education in the developing world and in the advanced countries of Europe and Asia have played an important role. They will continue to do so in their various forms, but the ideal will probably continue to be elusive.

It is apparent to all observers that the world we are entering in the decade ahead will be much different for the United States than the world before the end of the cold war, before the new strength of Asian economies and the rise of the European Economic Community (EEC). In the world ahead, a world more likely to engage the nation in political cooperation and in economic competition, one of our greatest national strengths is the respect U.S. higher education, especially at advanced levels, has earned in the world. The quality of our advanced educational system is clearly a part of our national competitive edge and, therefore, how our universities and scholars relate to institutions abroad is important to the nation. In such a world, creating mutually beneficial, truly cooperative long-term linkages will continue to be well worth the efforts of our universities.

Notes

1. The Ford Foundation. "The University and World Affairs," a report of the Committee on the University and World Affairs. J. L. Morrill, Chairman. December, 1960.
2. The Coalition for the Advancement of Foreign Languages and International Studies (SCOFFLAWS). "International Competence: A Key to America's Future," an action plan. December, 1989.
3. Conference organized by Washington State University and the University of Maryland in Spokane, Washington, June 5–7, 1990.
4. Smuckler, Ralph. "Institutional Linkages: A Key to Successful International Exchanges." In *The Annals of the American Academy of Political and Social Science.* March, 1976, pp. 50–51.
5. Stenson, E.V., and Calamine, J.S. "The U.C.L.A. Experience with Foreign Programs." In *Human Rights Quarterly.* February, 1984, p. 57.
7. *The Annals of the American Academy of Political and Social Science* (see note 4), p. 47.
8. Ibid, p. 51.

Chapter 10

Evaluation of Overseas Fellowship Programs

Abraham M. Weisblat

This chapter is based on my recent study, "Building National Capacity in the Social Sciences—Insights from Experience in Asia."[1] This study looked at five major fellowship programs carried on since the 1950s in order to build the capacities of Asian countries to examine socioeconomic issues scientifically. It paid particular attention to four countries, each with unique university and governmental traditions and each with its own strategy for human resource development.

The study focused on the accomplishments and problems of these programs as a source of insights for the future. It gathered information on the achievements of former fellows in the world of social science and governmental policy, their evaluations of their overseas experiences, and their advice to donor agencies on future programming. It emphasized ways in which they have helped their home countries become able to train social scientists better and looked at what must be done to maintain and expand that training capacity.

We asked former fellows to respond to a detailed questionnaire concerning their training and employment experiences. It also included supplementary interviews with fellows' present or potential employers in the Third World: among them, university leaders, government administrators, and private sector executives in India, Indonesia, the Philippines, and Thailand. The employers were asked to comment on the usefulness to their countries of the work of social scientists who were trained abroad and on steps needed to achieve or maintain an acceptable level of social science competence.

Data Collection

The Subjects

The study drew its data from a comprehensive survey of Asian social scientists who had received fellowships for graduate study in industrialized countries. Questionnaires were mailed to 944 men and women who:

- were from Bangladesh, India, Indonesia, Korea, Malaysia, Nepal, Pakistan, the Philippines, Republic of China, Singapore, Sri Lanka, or Thailand;
- studied in social science fields;
- were in fellowship programs between 1960 and 1985;
- were supported by the Ford Foundation, Rockefeller Foundation, Agricultural Development Council (ADC, now Winrock International Institute for Agricultural Development), International Development Research Center (IDRC); or U.S. Agency for International Development (USAID);[2]

A copy of the questionnaire was sent to the best available address for each of the former fellows. Given the three-decade age of these programs, donor agencies and home institutions had lost track of some fellows; hence, 105 questionnaires were returned un-

opened because the addressee was deceased or was unknown at the address given.

The Questionnaire

The questionnaire consisted of 44 questions that solicited information and opinions on a wide range of issues related to the respondent's employment history, study program, professional activities, and demographic data.

Response

Of the 839 questionnaires that we assume reached their addresses, 435 were completed and returned.

Considering the geographic dispersion of the respondents and the long period during which most had been out of touch with the fellowship donors and programs, the response rate of 51.8 percent for a mailed questionnaire is acceptable and compares favorably with the response rates for similar studies.

The response rate varied considerably from country to country. Three regions that have few former fellows (Korea, Sri Lanka, and Taiwan) responded most promptly and in the highest percentages. In each of these countries, virtually all of the former fellows were concentrated in a few institutions in the national capital or major university cities. The help of individuals at these centers made it possible to deliver questionnaires and collect responses personally.

In larger countries or those with more former fellows (such as India, the Philippines, and Thailand), potential respondents were more scattered. We could follow up only by letter, and some of the resulting response rates were lower.

Rates of response differed somewhat among funding agencies. IDRC had the highest rate, probably because its fellowship program was more recent and, therefore, its contact with the fellows was more recent and its mailing list was more current. ADC also had a good response rate, probably because its follow-up activities have been strong and its mail list is up-to-date.

Although the Asian fellowship programs of the Ford and Rockefeller foundations were larger than ADC's or IDRC's, they included physical and biological scientists, and we did not send questionnaires to those individuals. ADC limited its funding in Asia to social scientists, so all of its former fellows in the 12 countries received questionnaires. It is most heavily represented because it played a more prominent role than the others in supporting social science training.

Who Were the Fellows?

The age distribution of respondents reflected the trend in support for overseas graduate study and was affected by the retirement and death of members of the older generation. Only 15 percent were under 35, 40 percent were between 35 and 44, 27 percent were between 45 and 55, and 18 percent were 55 or older.

Despite the concentration of secondary and university education in urban areas in most developing countries, 50.1 percent of the respondents came from rural areas or communities of less than 20,000. Education stopped in primary school for 57 percent of the mothers of respondents and 28.5 percent of the fathers. Farming was listed as the occupation of 22.8 percent of the fathers and 12.2 percent of the mothers.

The pool of qualified female fellowship candidates has been growing, and funding agencies have been increasingly sensitive to the need to support them; so modest progress is being made. Only 11.5 percent of the fellows completing their study before 1970 were women as compared with 19.6 percent between 1970-1985.

Date Degree Completed

Most of the respondents completed their overseas program after 1975. This total reflects the slow buildup of fellowship support through the 1950s and 1960s.

While there was a decline in support in the 1980s, this is not reflected because the study only included persons whose overseas study ended by 1985. The response rate was somewhat higher for recent fellows because address lists for them were more up-to-date.

Nearly all of the fellows (99.3 percent) completed masters degrees, about half with financial support from an international funding agency. The growth in Third World capacity to offer work beyond the baccalaureate is evidenced by the fact that a little more than half earned their M.S. or M.A. degrees in a developing country.

Two-thirds of the fellows completed Ph.D degrees. A small but growing proportion (11.7 percent of the total

holding the doctorate) received that degree from a Third World institution.

Discipline

The social science discipline that received the greatest attention in the fellowship programs was economics. Of all fellows, 55 percent listed an economics major, with 33 percent in agricultural economics and 22 percent in general economics.

Sociology was the major field for about 12 percent, education for 7 percent and business administration for about 6 percent. Other fields studied included political science and public administration, rural development, anthropology, psychology, and communications.

The distribution of discipline is significant. It represents joint decisions by home countries and donors about which social science fields had the most to offer at the time and could benefit most from programs to strengthen staffing and research capacity.

In fields other than economics, modest gains have been made in recent years; 15 of the 18 persons doing graduate work in political science or public administration completed their studies after 1975.

Career Progress

A large number of fellows returned to work in their home countries after completing study abroad. Of those who responded, about 97 percent indicated that their first jobs after overseas study were in their home countries; five persons went to other Third World countries, and only four took employment in an industrialized country. There is no evidence of a later exodus. In 1985, 95 percent of the respondents were still at work in the Third World.

A clear majority of the fellows returned to academic positions, for the most part in junior ranks (assistant professor, instructor, research associate). About 56 percent still serve in universities.

Although none of the four fellowship programs carried an employment obligation, the first-job choices of returned fellows were influenced by national and agency human resource goals. University employment was the predominant first-job choice for returning fellows, particularly those from Thailand, the Philippines, Taiwan, India, Indonesia, and Bangladesh, at least 60 percent of whom found their first employment in the academic world. Respondents from Pakistan were somewhat more likely to begin their careers in research institutions, and those from Korea, Sri Lanka, and Nepal in governmental administrative and policy agencies. Respondents who were funded by the Ford and Rockefeller Foundations were most likely to return to university employment (86 percent for Ford and 87 percent for Rockefeller); 57 percent of ADC fellows and 50 percent of IDRC fellows returned to universities.

Whatever their official title and employment unit, most fellows (57.9 percent) continued to have teaching responsibilities in their jobs as of 1985. Some 60 percent continued to have research responsibilities. The biggest single change, as might be expected, was the increasing percentage who held university or governmental administrative and managerial duties: 29 percent in their first jobs and 47 percent in their 1985 jobs.

What Have the Fellows Accomplished Professionally?

Even a cursory review of the titles currently held by the respondents leaves no doubt as to their critical roles in socioeconomic policy in their countries. There is probably no better way to show how significant these four programs of fellowship support have been than to catalog some of these titles. Among the former fellows are persons who held the following positions of senior academic leadership at the time of this study:

Rector for General Administration, Hasanuddin University

President, University of the Philippines

Vice Chancellor, University of Peredeniya

Rector, University of Lampung

Vice Chancellor, University of Agricultural Sciences, India

President, Tamil Nadu Agricultural University

Others with major university administrative assignments included:

Dean of Graduate Studies, University of Indonesia

Dean, School of Social Work, University of the Philippines

Dean, Maharaja Sayajirao University, India

Dean, Korean College of Agricultural Cooperatives

Dean, Faculty of Social Sciences, Kasetsart University

Dean, Universiti Pertanian Malaysia

Director, Post-Graduate Institute of Agriculture, University of Peredeniya

Dean, College of Business Administration, University of the Philippines

Vice President for Planning, Central Mindanao State University

For many others, administration was combined with research leadership in university-based posts:

Director, Institute for Economic and Social Research, University of Indonesia

Director, Center for Policy Research, University Sains Malaysia

Research Director, Korean Rural Economics Institute

Director, Research and Development Institute, Khan Kahn University

Director of Research, Bangladesh Academy for Rural Development

Associate Director of Extension and Training, Kasetsart University

Director, Applied Economics Research Centre, University of Carica

Director of Extension Programs, University of Indonesia

Chief of Research, Pakistan Institute of Development Economics

Former fellows were also administrative leaders in governmental agencies:

Chairman, Agricultural Development Authority, Sri Lanka

Deputy chief, Agricultural Prices Commission, Pakistan

Governor, Ministry of Interior, Thailand

Director-general, Malaysian Farmers' Organization Authority

Director, Ministry of Health, India

Deputy Minister, Ministry of Agriculture, Philippines

Director-general of International Monetary Affairs, Ministry of Finance, Indonesia

Deputy Director, Agricultural Extension Service, Sri Lanka

Rural Development Officer, Office of Accelerated Rural Development, Thailand

Deputy Director, National Institute of Local Governments, Bangladesh

Chief Economist and Senior Economist, Agricultural Projects Services Center, Nepal

Chairman, National Development Planning Agency, Indonesia

The highest-level government official in Taiwan (the president) is a former fellow, and Taiwan's coordinating structure for agricultural administration (the Council for Agricultural Planning and Development) rests heavily on persons who took part in the four fellowship programs.

Some former fellows perform governmental or quasi-public duties in research and administration:

Deputy Secretary General, National Research Council, Thailand

Director, Land and Development Institution, Indonesia

Director, Ground Water Research Institute, India

Director, Council of Agricultural Research and Development, Philippines

A clear majority of the former fellows (63 percent) went directly to university positions after overseas study; 55 percent still list universities as their primary employers, and 58 percent do some university teaching.

Nearly 80 percent of those working in academic institutions have supervised graduate students, 85.2 percent have developed or presented new courses, and 89 percent have designed changes in the curriculum. More than 85 percent have taken part in research requiring field data collection, and more than 70

percent have published journal articles or books in their field.

The Fellowship Experience

Fellows said the knowledge and skills they acquired overseas were useful both in their first jobs after returning home and, to a lesser degree, in their current work. Only 2 percent said that their fellowship experiences were of slight or no value in preparing them for their first jobs after returning home, and only 3 percent expressed that opinion about their fellowships' usefulness to their present work.

Most fellows took their Ph.D course-work abroad, and they found that is the ideal approach. But while only 40 percent did their thesis research in their home country, more than 60 percent recommended that practice.

Respondents were asked about five areas in which individuals studying abroad are most likely to need encouragement and support from the donor agency. Those who indicated either that they did not need assistance on these matters or that the help they received was adequate were more likely to describe the professional side of their fellowship experience as fully satisfactory.

Level of Preparedness

In mathematical skills, knowledge of statistics, research methodology, and the theory of their disciplines, most fellows felt that they started their overseas study as least as well-prepared as other students. Even in mathematics, where the greatest weakness was reported, more than two-thirds said they were at least as well-prepared as their fellow students. Moreover, there was little relationship between perceived level of preparedness and satisfaction with the study program.

The responses give impressive evidence of growing strength in undergraduate education in the developing countries. Of those who completed study before 1965, 34.8 percent considered themselves less well-prepared than other graduate students. For the group since 1980, the percentage feeling such inadequacy had dropped to 16.1.

Language Problems

Of the many variables examined, language casts the greatest shadow on the satisfactoriness of the fellows' study programs. Even when English is the language of university instruction, it may be the second language for many students. Serious to very serious language problems in some component of graduate study were reported by 23 percent of the former fellows. As might be expected, those reporting the least difficulty reported the most satisfaction with their overseas experiences.

Problems Encountered on Return

Only 11 percent of those responding to the question said that, taking everything into account, they encountered major difficulties in getting relocated and reestablished. Another 41.5 percent reported minor difficulties, and 47.7 percent said they had few or no difficulties. Fewer than 8 percent reported any serious difficulty adjusting to family obligations, the tempo of life, cultural norms, or the political situation at home. Even fewer had serious difficulty finding appropriate jobs and gaining acceptance of their coworkers. Much more difficulty centered around getting the resources needed to perform their duties successfully at their home institutions.

Lack of equipment and supplies and inadequate economic rewards were the most commonly reported problems. Between 50 and 79 percent reported problems because of heavy professional responsibilities, lack of transport for job-related travel and limited institutional interest in research.

Less than 15 percent reported a heavy teaching load, the employment policies of the institution, difficulty in finding an appropriate job, the social status of professional work, or acceptance by coworkers.

The most dissatisfaction and concern were expressed in the area of professional development. More than one-half needed a chance to attend professional meetings abroad, and a sizable group wanted opportunities for further training, funds for research, better availability of books and journals, and access to in-country professional meetings.

Networking

Social scientists in smaller countries need regular contact with peers elsewhere if they are to maintain professional capacity. Nearly half reported frequent contact with professionals employed by government in their countries or region—many with professors at other universities in their home countries—and over 17 percent with professionals in international agencies. Only 15 percent reported such contact with professors at their overseas universities, 9 percent with professors elsewhere in Asia, and 7 percent with other overseas professors. Nearly two-thirds belonged to scientific societies, despite the high cost in relation to income and scarcity of foreign exchange.

The data on career progress and previous positions indicates that the program was a success. As you travel in Asia, you quickly discover that these are the people who play key roles in helping Asian countries work through their problems.

Another issue raised about these programs is that they lead to a "brain drain." As we look at the data concerning these people, it indicates that 95 percent of the respondents were still working on problems of development in their own country. I am quite convinced the brain drain issue is a red herring. The number who leave for higher income is steady worldwide. The real issue is whether there is an opportunity to use their acquired skills upon their return home. Raj Krishna noted that when he was ready to return, The Rockefeller Foundation provided some support to allow him to get research going. He noted, "People in power are knowledge-proof. It takes a while for them to understand the value of the new ideas you bring back."

Looking to the Future

The overwhelming impression from this study is that the fellowship programs of the Ford Foundation, the Rockefeller Foundation, Agricultural Development Council, International Development and Research Center, and USAID were a wise and far-sighted investment. They have borne out the high expectations upon which they were based. They also point to an unfinished agenda that has the possibility of a rewarding outcome.

One of the results of a successful program is that the very nature of its success changes the world and creates a set of issues and problems which most donors never anticipated. A discussion of some of these issues and the ensuing recommendations for dealing with them is based on the responses of the fellows, on interviews with university and government officials in Asia who have employed such people, and on my experience and observations in a number of Asian countries.

It is hard for us to recognize that, while the donors have been successful in creating a generation of professional competence, we also need to provide the opportunity for such groups to continue to grow and develop. In the long run, keeping them alive and thriving will be the responsibility of home governments and universities. But in the interim, donors can help.

Comments and Recommendations

1. *Well-established Third World social scientists urgently need greater encouragement and material support for their research programs.*

Almost every active social scientist responding to this study emphasized a lack of money for needed research. Social science invariably gets low priority when a nation allots its own scarce resources among development needs. The problem is not that social science is perceived as without value. Interviews with governmental policy leaders in Asia confirm that they appreciate the hard facts and critical analyses contributed by the social sciences. They understand that research can give some protection against unwise policies being dictated by ideological or partisan political commitment.

It is surprising, therefore, that two-thirds of the respondents who said they consider research an important part of their work also said that inadequate institutional appreciation of the value of research is a problem for them.

These two sets of responses are hard to reconcile, and one explanation may be that the customary project approach has proved a particularly unsatisfactory way to fund social science research. In resource-poor developing countries, what hard-headed policy leader can feel comfortable about diverting funds to a social science research project in preference to building highways and irrigation structures, training teachers,

or even breeding higher yielding cereals and tubers? The success of these endeavors may well rest on the kind of insights a healthy social science community can produce, but the race for funding is, nevertheless, unequal.

2. *Donors should find ways to give experienced Third World social scientists greater influence over their own research agendas.*

Research priorities in any field represent a mix of the interests of the scientists themselves and of the various external agencies offering financial support.

In the industrialized countries, this has been a productive partnership because both sides have operated from positions of strength. Funding based on peer review has given the scientists in each discipline considerable power to guide the direction of research. Scientists have worked within a system that often permitted them to pursue a line of inquiry far beyond its original boundaries and time limits.

Scientists and scholars in developing countries have had much less freedom. Resources are scarce to begin with. The "peers" in peer review are likely to be scientists or, more often, administrators from developed countries. The mix of the research agenda is usually tilted sharply toward projects of short duration that have limited objectives and stress immediate applicability of results.

This suggests that establishing a limited number of endowed chairs in selected Third World universities would give an extraordinary stimulus to the social science fields. Appointments of this kind, externally funded, would not, in most cases, require salary support, but should provide a generous allocation for professional activities. Support should be guaranteed for at least five years, and the appointees would have full freedom to make their own judgments as to which activities would be most productive for them and their institutions. Some would choose to expand their research skills and broaden their range of interests through postdoctoral study or visiting professorships; this could lead to worthwhile collaboration in teaching or research. Some would use funds to support research costs: buying supplies, equipment, books, and journals, or paying travel costs. Most would use some funding to attend international professional meetings.

3. *Donors should invest in linking the social scientists of Asia with world currents in their disciplines.*

Social scientists in the developing countries of Asia fear that they are losing touch with their colleagues elsewhere and with advances in their fields.

A person who has had academic and research experience only in U.S. or European institutions may find it hard to appreciate the conditions under which the men and women who responded to this survey carry out their work. Some are in countries where only one or two educational institutions are engaged in scholarly work in the social sciences. At best, they have only a handful of persons with whom, day by day, they exchange ideas in their fields. Usually, they must choose between publishing their work in a language confined to one or two countries or writing for (and, therefore, choosing research topics adapted to) the scholarly journals of the industrialized world. Often, the dilemma is one of being irrelevant at home because of heroic efforts to remain active in a mainstream that is thousands of miles away, or remaining active on home-country projects that never come to the attention of (and, therefore, never benefit from the scrutiny of) a world circle of scholars.

The fellows who have chosen to return to work in their home countries are applying their social science skills in an arena where they have a comparative advantage. But they emphasize again and again their need for better access to professional books and journals, travel to international professional meetings, postdoctoral fellowships, and other advanced training opportunities. Giving them such access would remove a serious source of frustration, enrich the quality of their work, and give scholars in other countries—including the developing world—the benefit of their contributions.

4. *Donors and technical assistance agencies should continue to sponsor a modest program of tightly targeted conventional fellowships to send outstanding undergraduates abroad for graduate study.*

Much of Asia can now provide its young people with educational opportunities at home that make postbaccalaureate study abroad no longer essential for preparing competent and well-rounded professors, research directors, and policy planners. Other strong grounds remain, however, for continued support for fellowships abroad.

Every country must combat the forces of insularity and provincialism. Persons who study overseas are a channel for new ideas and new perspectives. They are also a rich source of stimulation and a broadening force for the students and professors in the foreign universities that serve as their hosts.

Donors should give particular attention to the need to capitalize on the growing numbers of women university graduates in the developing world. Women have increasingly gained access to secondary and university education, and their availability as candidates for postgraduate study has increased, but there has been a built-in lag in their representation as full staff members at teaching, research, and policy institutions. With fewer overseas educational opportunities available today, it will take special effort to see that women enjoy them at a level that previous generations of men did.

Fellowships are needed to diversify the economic and social composition of the group of young people who study outside the country. It would be unfortunate if overseas study opportunities were limited to the wealthy, the well-born and those with political connections.

The Third World countries coping with generally limited financial resources—and even more limited access to foreign exchange—will continue to count on outside help to meet these needs.

5. *Donors should continue a vigorous effort to help social scientists in neighboring countries, or within a region, benefit from exchange of information and ideas.*

Most respondents in this study reported some continued contact with the institutions where they did their doctoral study, but not much with other universities in the industrialized world. They described even more frequent contact with colleagues in their own countries, although often, that group did not provide the numbers or diversity to meet the needs of scholarly criticism, cooperation, and interaction.

Their least-frequent professional contacts have been with academics and scholars in their own field in neighboring countries. Here, surely, regular exchange has a great deal to offer. Yet almost everywhere, intercountry travel is given a low priority for the allocation of institutional resources, and the younger and less-experienced social scientists, particularly, suffer at a key time in their careers.

Promoting increased professional contact within a region would cost little. While strengthening the competence of social scientists, it could also contribute to a more effective intercountry approach to solving shared problems.

New Areas of Programming

I would like to note two new areas of programming that are now possible as a result of these programs—areas that provide real potential for Third World countries and the West. These areas would center on: (1) providing a network for the interchange of experience and ideas among developing countries themselves; and (2) providing a forum so that the developed countries can learn and benefit from research in the Third World.

South–South Dialogue

Policy-makers' and advisors' understanding of the development process is often limited to specific geographic regions and usually to the short- or medium-run. Few people appreciate the time it took Europe and the United States to go from rural to highly developed urban societies. It is almost invariably a serious error to try to relate current conditions in Asia, Latin America, and Africa to what would seem to have been comparable stages of development in Europe and the United States. There is an enormous amount of highly relevant developmental experience within contemporary Asia, Latin America, and Africa, but very little interchange of information. North–South dialogue may be essential if one is to deal effectively with the development process in Third World countries, but South–South dialogue could offer an even greater contribution.

Original research and innovative field projects are being developed and important lessons are being learned. Unfortunately, there is limited communication among developing countries about these discoveries. Communication between different continents is even more difficult. It is true that important differences exist between regions, and that creative projects and insights often emerge from unique historical and cultural contexts. Over the last decade, however, activists and professionals in developing countries have made important advances in learning to deal with

specific problems. Nevertheless, practitioners too often remain ignorant of who is doing what in other countries and of the methodologies used, results achieved, policies developed, and lessons learned. Interchange of experience and ideas could prove tremendously enriching.

Programs on specific development are needed that will build a rich web of relationships and exchanges among people working on the specific problems in Asia, Africa, and Latin America. The network would aim to create:

1. A strong, trusting relationship among individuals and institutions;
2. Useful exchanges of information or methodologies, results, policies, etc; and
3. The ability to work together to influence policies in multilateral institutions.

Learning from the Third World

The other area that has great potential is to recognize that, as a result of the current professional capacity in Third World countries and their research programs, there is a body of knowledge and experience that can assist countries like the United States in dealing with some of our own problems. These issues fall into two categories: those that we don't even recognize as problems that should be dealt with, and those we know exist but have never considered in light of the body of knowledge in these countries that we can utilize. It is very hard for the donor community, particularly academia, to recognize that the professionals they helped to develop are responsible for this great change. T.W. Schultz, the Nobel Prize winner in Economics, summed it up very well when he told me that you can identify the best graduate student you ever had when he destroys everything you have taught him as he moves ahead with new ideas, new theories, and new research areas.

First: Third World professionals have noted and worked in areas of research to solve problems we have not yet even recognized.

Example: Low-income women are found both in the urban and rural areas of developed and developing countries. In the urban areas, low-income women are poor and earn their living by working in the informal sector, where there are neither any job guarantees nor regulation of working conditions.

Studies have shown that women outnumber men in the informal sector. This can be partly explained by the fact that the reproductive and productive activities of women prevent them from gaining training for work in the formal sector. They then depend on the informal sector activities and are vulnerable to the negative impact of the unpredictable and exploitative nature of the work conditions. In rural areas, women work as housewives and agents of production. Both of these categories of jobs are labor intensive, and it often takes many hours a day to complete one task. As housewives, they are responsible for the daily chores including child care, house maintenance, food processing and preparation, and long hours of strenuous labor while fetching water and fuel over long distances.

As active agents of production, low-income women are responsible for growing the field crops (i.e., producing a food crop for subsistence), assisting men in the cultivation of cash crops, livestock and poultry rearing, home-based industries, and transport and local trade.

In contrast, men are largely engaged in cash-earning activities. It has been shown that women work longer hours per day than men do and often have considerably less time to rest. As a result, women are sometimes overburdened and stressed. Such conditions constrain women's productivity.

Low-income women, though very active in production, are limited by the following factors:

- Women have problems gaining access to land. This is largely derived from the traditional recognition of landownership as male prerogative.
- Credit is usually available for both men and women, provided a guarantee can be made. Loans are made available on collateral (commonly land title, cattle, etc.), all of which are disproportionately held by men. Such procedures unintentionally discriminate against women.
- Modern agricultural improvements (productive input, such as high yielding seed varieties, fertilizers, pesticides, agricultural equipment), all of which boost production, must be purchased. Since women have limited financial resources, they are unable to acquire and make use of these improvements.

One can gather from the literature that the expressed objectives of agricultural extension services are the reduction of poverty and the increase of agricultural inputs to better productivity. To date, the focus has been primarily on the latter goal and hence, services have been directed to well-off farmers, normally men, who can afford agricultural inputs. Advice given to agriculturalists has concentrated on export crops together with a package of cultivation methods and inputs designed to encourage an intensive approach to the cultivation of these crops. Little attention has been paid to food crops, which are fully women's responsibilities. The poor rural women working in agricultural lifestyles continue to struggle with limited resources to cultivate food for their families.

There has been growing recognition of the contribution of low-income women to the sustainability of most economies, but less attention has been given to the impact of women's health on the activities of women.

Dealing with the household as a single unit of production and consumption obscures the situation of low-income women. A 1983 report of many Latin American cities showed that more than 50 percent of all families, and an even greater number of poor families, were headed by women. In 1987, a Bombay census showed that women comprise 27 percent of all wage earners, and 90.9 percent of them earned less than minimum wage. These reports increase our awareness of the importance of women in the work force, as well as in the quality of family life.

Second: We are aware of problems with which we need help, and work on these problems is being done in the Third World.

Example: One major problem, environmental degradation, has become particularly pressing. "Concern for environmental degradation, particularly for unsustainable agriculture, has become urgent with the alarming speed of deforestation and desertification, spread of soil erosion, ingress of salinity, water shortage, increase in pests and crop diseases, and other symptoms of environmental degradation."[3]

Vyas goes on to describe the amount of work that is being done on this problem in Third World countries, much of which is news to us. But equally important is his concern that many of the solutions offered ignore the implications of the solutions on the rural poor. "There is a discernable lack of clarity on the nature of the interrelationship between rural poverty and environmental constraints that effects sustainable agriculture, and a good deal of confusion on how to tackle them simultaneously."[4]

These are just two examples of areas where we can learn from Third World countries. We are only beginning to recognize the potential of learning from our colleagues in developing countries by forming mutually-beneficial working partnerships with them.

Notes

1. Weisblat, A. M., and Kearl, B. *Building National Capacity in the Social Sciences-Insights from Experience in Asia.* Winrock International Institute for Agricultural Development: Route 3, Box 376, Morrilton, AR.
2. Interviews with Fellows supplied by USAID were limited to those from India and Indonesia.
3. Vyas, Vijay. Elmhurst Lecture, "Agrarian Structure, Environmental Concerns and Rural Poverty," International Association of Agricultural Economists, Japan, August 22, 1991.
4. Ibid.

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